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Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Lake Jefferson
Sullivan County
Callicoon Creek

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

The examination of documents and visual inspection of Lake Jefferson Dam and appurtenant structures did not reveal conditions which constitute a hazard to human life or property.

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The discharge capacity of the spillway is inadequate for all flows in excess of 50% of the Probable Maximum Flood (PMF). During the 1/2 PMF event the water surface will be 0.1 feet below the top of the dam and the outflow will be 15,200 cfs.

The following problem areas were observed which require remedial action within 1 year of notification to the owners.

1. Repair the deteriorated portions of the spillway, spillway walls, concrete core wall and capping.

2. Monitor the seepage observed at the toe of the earth embankment at bi-weekly intervals with the aid of weirs.

3. Remove the trees and brush on the slopes and abutments of the earth. Provide a program of periodic cutting and mowing.

4. Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of the reservoir drain system, and monitoring of the sedimentation behind the spillway. Document this information for future reference. Also develop an emergency action plan.

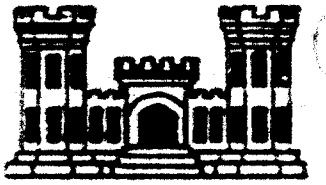
DELAWARE RIVER BASIN

LAKE JEFFERSON DAM

SULLIVAN COUNTY NEW YORK
INVENTORY NO. NY 205

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Jefferson Dam (Inventory Number NY-2[illegible]), Delaware River Basin, Sullivan County, New York. Phase I Inspection Report,



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NEW YORK DISTRICT CORPS OF ENGINEERS

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CONTRACT NO. DACW51-79-C0001

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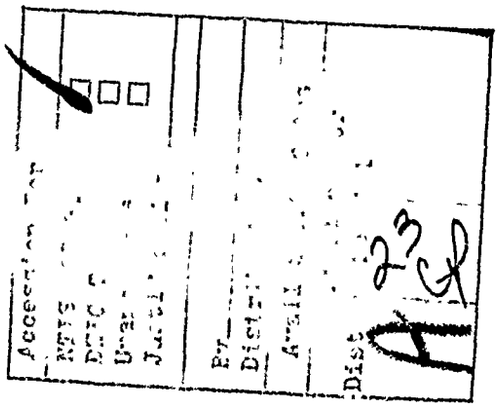
PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.



PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
LAKE JEFFERSON DAM I.D. No. 205
DEC #147C-766 DELAWARE RIVER BASIN
SULLIVAN COUNTY

TABLE OF CONTENTS

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Lake Jefferson (I.D. No. NY 205)
State Located:	New York
County Located:	Sullivan
Stream:	East Branch of Callicoon Creek (tributary of Callicoon Ck. & Delaware River)
Date of Inspection:	November 16, 1979

ASSESSMENT

The examination of documents and visual inspection of Lake Jefferson Dam and appurtenant structures did not reveal conditions which constitute a hazard to human life or property.

The discharge capacity of the spillway is inadequate for all flows in excess of 50% of the Probable Maximum Flood (PMF). During the 1/2 PMF event the water surface will be 0.1 feet below the top of the dam and the outflow will be 15,200 cfs.

The following problem areas were observed which require remedial action within 1 year of notification to the owners:

(1) Repair the deteriorated portions of the spillway, spillway walls, concrete core wall and capping.

(2) Monitor the seepage observed at the toe of the earth embankment at bi-weekly intervals with the aid of weirs;

(3) Remove the trees and brush on the slopes and abutments of the dam. Provide a program of periodic cutting and mowing; and

(4) Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of the reservoir drain system, and monitoring of the sedimentation behind the spillway. Document this information for future reference. Also develop an emergency action plan.

George Koch

George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

Approved By:

Clark H. Benn

Col. Clark H. Benn
New York District Engineer

Date:

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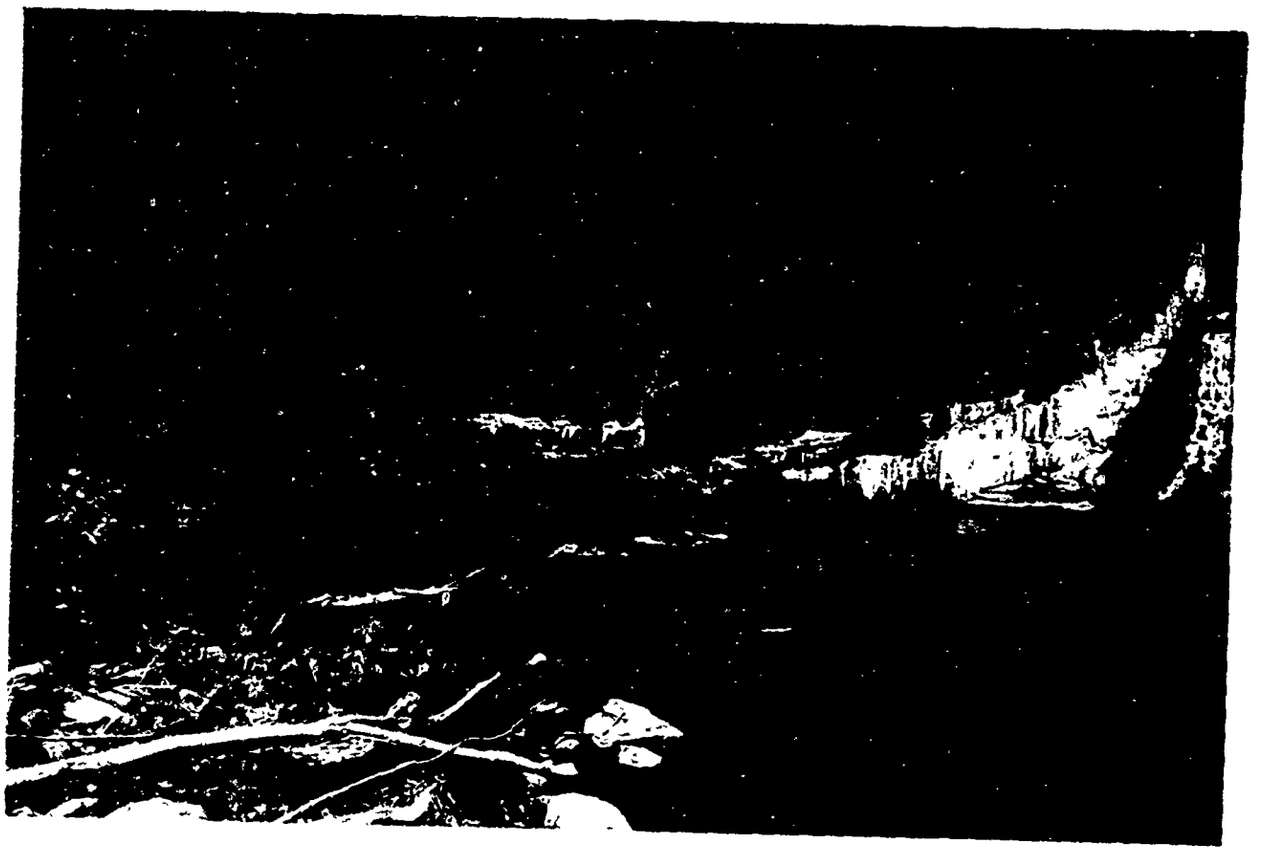
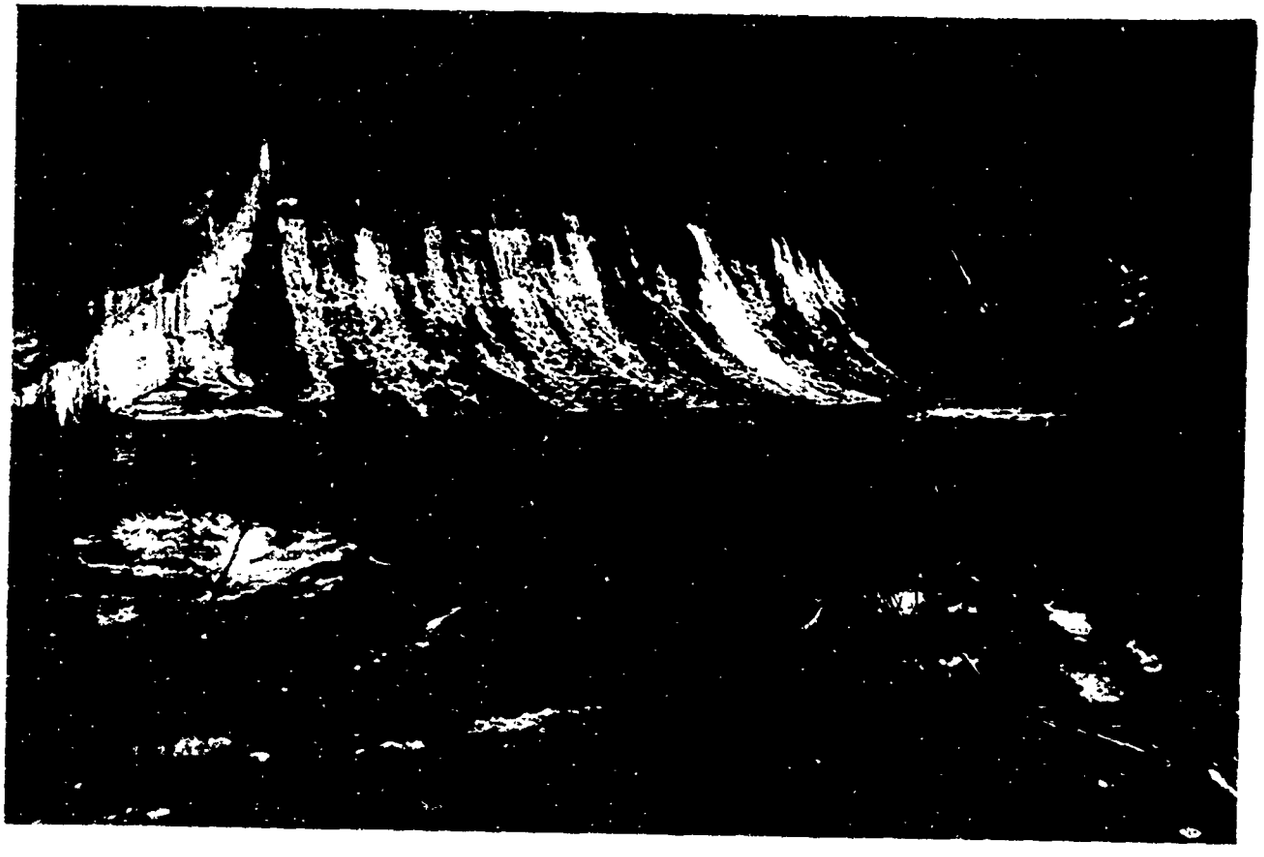


Overview of Lake Jefferson Dam
Embankment Portion
Photo #1



Overview of Lake Jefferson Dam
Spillway Portion
Photo #2

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
LAKE JEFFERSON DAM I.D. No. 205
DEC #147C-766 DELAWARE RIVER BASIN
SULLIVAN COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority
The Phase-I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection
Evaluation of the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to human life and property and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances
Lake Jefferson Dam consists of a 160 feet long concrete covered masonry ogee spillway adjacent to 153 feet long compacted earth embankment containing a concrete core wall. The maximum height of the dam is 40 feet. The slopes of the earths embankment are: downstream slope = 1 vertical on 2 horizontal and upstream slope = 1 on 2.5. The concrete core wall extends from the exposed concrete cap to bedrock or "Red Clay Hard-Pan". The core wall has a top width of 2.5 feet and widens to 8 feet at the base. A 30 inch diameter cast iron pipe extends through the embankment adjacent to the spillway and serves as a reservoir drain.

b. Location
The dam is located on the East Branch of Callicoon Creek a tributary of the Callicoon Creek and the Delaware River, less than 1 mile from the Village of Jeffersonville, New York.

c. Size
The dam is 40 feet high and impounds approximately 420 acre-feet. The dam is classified as "intermediate" in size (40 to 100 feet in height).

d. Hazard Classification
The dam is classified as high hazard, because of its location above the Village of Jeffersonville.

e. Ownership
The dam is owned and operated by Mr. Ludwig Grupp, Jefferson Lake Hotel, Jeffersonville, New York 12748, Telephone (914)482-5383.

f. Purpose of the Dam
The dam provides storage for recreation.

g. Design and Construction

The dam was designed by Nial Sherwood C.E. Liberty N.Y. in 1927 and constructed by Lake Jefferson Inc. A prior design by Joseph B. Rider C.E. of New York City was initiated in 1922 by Clarke Water & Power Co. Inc. This design was partially built and remained incomplete until 1927 when Lake Jefferson Inc. completed the project. All available plans and related documents are on file at the N.Y.S. Department of Environmental Conservation 50 Wolf Road Albany, New York.

h. Normal Operating Procedures

All flows are discharged over the spillway. The reservoir drain system is operated periodically for maintenance purposes.

1.3 PERTINENT DATA

a. Drainage Area (sq. mi.)	30.34
Dam Height (ft.)	40
b. Discharge at Dam Site (cfs)	
Maximum known flood	4375 Aug. 17, 1947
Spillway at maximum pool (el. 1090)	15465
Maximum capacity of reservoir drain	50
Total discharge, max, pool	15500
Average daily	60
c. Elevations (ft. above MSL, USGS)	
Top of dam	1090.
Spillway crest	1081.
Original stream bed	1050.
d. Reservoir	
Length at spillway crest(mi.)	.75
Length & shoreline at spillway crest (mi.)	1.50
Surface area at spillway crest (acres)	48.
e. Storage (acre-feet)	
Top of dam	890.
Spillway Crest	420.

f. Dam

Type: Compacted earth embankment with concrete core wall.

Length (ft)	153
Upstream Slope	2.5:1
Downstream Slope	2:1
Core Material	concrete

g. Spillway

Type:	Masonary, ogee section
Length(ft)	160

h. Reservoir Drain

30" diameter cast iron pipe, valve on downstream side.

SECTION 2: ENGINEERING DATA

2.1 GEOLOGY

Lake Jefferson Dam is located in the glaciated portion of the Appalachian Uplands (northern extreme of the Appalachian Plateau) physiographic province of New York State. These uplands were formed by the dissection of the uplifted, but flat sandstones, siltstones and shales of the Early Upper Devonian Period (365 to 385 million years ago). The plateau surface is represented by flat-topped divides with drainage generally south or southwestward toward the Delaware River.

Glacial cover is generally thin, the deposits of which have resulted from glaciations during the Wisconsin glaciation, approximately 11,000 years ago.

2.2 SUBSURFACE INVESTIGATION

No subsurface investigation could be located for the project. However, the "General Soil Map of New York State" prepared by Cornell University Agriculture Experiment Station indicates that the surfician soils are Lackawanna Soils of glacial till origin. These soils have poor internal drainage characteristics. Boulders are common and the depth to bedrock is variable.

Sandstone bedrock was observed outcropping at the left abutment of the spillway and in the bed of the downstream channel.

2.3 EMBANKMENT and APPURTENANT STRUCTURES

The original design of the dam was by Joseph B. Rider C.E., Consulting Engineers, 26 Cort Landt St., New York City, N.Y. in 1922. The Clarke Water & Power Company Inc. excavated the left rock abutment of the spillway, and built the core wall and possible the spillway elements of the dam. A 30 inch diameter cast iron reservoir drain pipe was also installed.

In 1927 Nial Sherwood C.E. of Liberty, NY, redesigned the dam, and construction of the earth embankments, left end of the spillway and reservoir drain valve were completed by Lake Jefferson, Inc.

The dam is 40 feet high and consists of a 160 feet wide ogee spillway and a 153 feet wide earth embankment. A concrete core wall extends to the top of the embankment. A 30 inch diameter cast iron pipe serves as a reservoir drain.

2.4 CONSTRUCTION RECORDS

No construction information is available other than that found the NYS DEC files.

2.5 OPERATION RECORDS

No operation records are available.

2.6 EVALUATION OF DATA

The information presented in this report has been compiled from information obtained in part from Mr. Ludwig Grupp, owner of the dam. This information appears adequate and reliable for Phase I Inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

The visual inspection of Lake Jefferson Dam was conducted on November 16, 1979. The weather was partly cloudy and the temperature ranged in the forties. The reservoir level at the time of the inspection was approximately 2 inches above the spillway crest.

b. Embankment

The earth embankment is located on the right side of the spillway and no evidence of sloughing subsidence, depressions or cracking was observed. Some trees and low brush was noted on the upstream and downstream slopes. One animal burrow was also evident approximately 15 feet from the crest on the downstream slope. (See Photos #1,5,6,7,8&11)

Seepage was observed along the toe of the embankment, and estimated to be approximately 10 gpm. (See Photo #11 & 12) About 5 gpm was observed eminating from the abutment area. This area is below a leach field for a resident and in the vicinity of an old tannery vat building which was not observed but is indicated on the plans (See Phot #11) Approximately 25 to 30 feet right of the right spillway wall at the toe of the embankment an additional 5 gpm was observed eminating from 2 small (1 inch diameter) holes. No migration of fines was observed. However, the soil in the area had a rusty appearance and a small amount of gray sediment was noted at the perifery of the seepage points. (See Photo #13)

Deterioration of the concrete core wall cap and minor cracking of the core wall was observed (See Photos #6 & 8)

c. Spillway

The spillway is concrete covered masonry ogee structure with a bedrock formed downstream channel. (See Photos #1 & 2) The downstream face of the spillway (i.e., concrete covering) is deteriorated, exposing the masonry substructure at numerous locations. (See Photos #3 & 4) The spillway abutment walls are cracked and deteriorated, and the downstream end of the right spillway buttress wall is partially undermined (See Photos #1,2,3,4, &10)

d. Downstream Channel

The downstream channel is bedrock formed. Some minor debris and trees were noted in the channel. (See Photos #1&2)

e. Reservoir

No signs of instability were observed in the reservoir area. Sediment has accumulated behind the spillway portion of the dam (See Photo #4) and it was reported that some sediment has accumulated at the upper end of the reservoir.

f. Reservoir Drain

A 30 inch cast iron pipe serves as a reservoir drain. The control mechanism is a valve located at the right spillway buttress on the downstream face of the dam (See Photos #1,2,&9).

3.2 EVALUATION

The problem areas observed during the inspection and the recommended remedial actions or investigations are as follows:

1. The seepage observed at the toe of the earth embankment should be monitored bi-weekly with the aid of weirs. If the seepage rate increases appreciably, repair measures will be required.

2. The deteriorated concrete of the spillway, core wall cap, spillway buttresses, and core wall requires repair.

3. Remove all tree and brush on the slopes and at the abutments of the earth embankment. Provide a program of periodic cutting and mowing of the embankment surfaces. Also, backfill the animal burrow on the downstream face of the embankment.

4. Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of reservoir drain valve. Document this information for future reference. Also, develop an emergency action plan.

5. Monitor the sedimentation within the reservoir area particularly that behind the spillway and remove as required.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The normal water surface is approximated by the crest of the spillway.

4.2 MAINTENANCE OF THE DAM

The dam is maintained by the owner, Maintenance of the dam is not considered satisfactory as evidenced by the deteriorated concrete elements of the dam, and the vegetation on the slopes of the embankment.

4.3 WARNING SYSTEM

There is no warning system in effect or in preparation.

4.4 EVALUATION

The dam and appurtenances have not been maintained in satisfactory condition as noted in "Section 3: Visual Inspection."

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

Jefferson Lake Dam is located on the East Branch Callicoon Creek approximately 1/2 mile east of Jeffersonville, the township of Callicoon, Sullivan County, New York. The total drainage area is 30.34 square miles. The basin was broken into two subasins, one of 12.18 square miles which tends toward flat and swampy and other of 18.16 square miles which is fairly steep and well drained.

5.2 ANALYSIS CRITERIA

The analysis of the spillway capacity of the dam and storage of the reservoir was performed using the Corps of Engineers HEC-1 computer program incorporating the "Snyder Synthetic Unit Hydrograph" method and the "Modified Puls" flood routing procedure. The floods selected for analysis was the PMF and 1/2 PMF in accordance with the recommended guidelines of the Corps of Engineers.

5.3 SPILLWAY CAPACITY

The Lake Jefferson spillway is an uncontrolled ogee section, 160 feet long and 9 feet of depth to dam crest. It is a masonry structure in need of minor repair to the spillway crest due to slight deterioration.

The spillway has a capacity of 15,465 cfs at top of dam which is essentially 1/2 the computed PMF of 15250 cfs. The dam would be overtopped by approximately 4. feet at the PMF of30,500 cfs.

5.4 RESERVOIR CAPACITY

Capacity to normal water elevation is 420 acre feet. Surcharge storage to top of dam is an additional 460 acre-feet, creating a total storage of 880 acre feet. The surcharge storage between spillway and dam crest is equivalent to .28 inches of runoff.

5.5 FLOODS OF RECORD

The maximum known flood of record occurred August 17, 1947 at Callicoon. Ratioed by drainage area the estimated discharge at Jefferson Lake was 4375 cfs, this flow would be approximately 4 feet above the spillway crest.

5.6 OVERTOPPING POTENTIAL

The PMF analysis indicates the dam will be overtopped by 4 feet during the PMF. Many homes downstream of the dam would be inundated in the case of a PMF. The spillway will handle 1/2 the PMF with approximately 0.1 feet of freeboard. It is felt that a flow with the magnitude of 1/2 the PMF would cause much flooding to the low lying homes in Jeffersonville.

5.7 EVALUATION

The spillway is inadequate to pass the PMF of 30,500 cfs, but is adequate to pass 1/2 the PMF of 15,250 cfs. As previously stated there are many low lying homes in Jeffersonville which would be flooded in either case.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

No signs of major distress were observed in connection with the earth embankment at the spillway. However, some seepage was observed at the toe of the embankment and the concrete elements of the spillway and core wall are deteriorated.

b. Design and Construction Data

The only information concerning the stability of the structure is that section of the spillway indicated on the plans which implies that the resultant of forces falls within the middle 1/3 of the structure's base. (See Appendix F Drawings)

c. Stability Analysis

A stability analysis was conducted for the concrete covered masonry gravity spillway section. The results of the analysis are as follows.

Case	Description of Loading Conditions
1	Normal Operating Conditions, reservoir as Spillway Crest full uplift tailwater 3 feet.
2	Same as case 1 with 5.0 kips/L.F. Ice Load
3	Water at 1/2 PMF level (El. 1090), Uplift as in case 1, tailwater = 6 feet
4	Water at PMF level (El. 1094), Uplift as in case 1, tailwater = 8 feet.
5	Normal Conditions as in case 1, with seismic forces of = 0.1

Note: the sliding and overturning resistance of the buttress walls has been neglected. The shear strength of the cut-off sections beneath the spillway have been included in the sliding stability analysis.

Case	Factor of Safety Overturning	Location of Resulted from Toe	Factor of Safety Sliding
1	1.80	18.3	8.25
2	1.63	15.9	7.78
3	1.45	14.0	5.60
4	1.32	11.6	4.82
5	1.49	13.5	6.20

The location of the middle 1/3 is 11.0 to 22.0 feet from the toe.

These results indicate that the spillway portion analyzed is stable for all design conditions, and further investigation is not required. Further information concerning this analysis is included in Appendix E "Stability Analysis."

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase I Inspection of Lake Jefferson Dam did not reveal conditions which constitute a hazard to human life or property. The embankment and spillway portions of the dam are not considered to be unstable.

b. Adequacy of Information

Information reviewed for the purposes of the Phase I Inspection report is considered adequate.

c. Urgency

The remedial measures listed below should be completed within 1 year of notification to the owner.

d. Need for Additional Investigation

No additional investigations are required at this time.

7.2 RECOMMENDED MEASURES

1. Repair the loose spalled and deteriorated portions of the spillway, spillway walls, concrete core wall and concrete capping of the core wall.

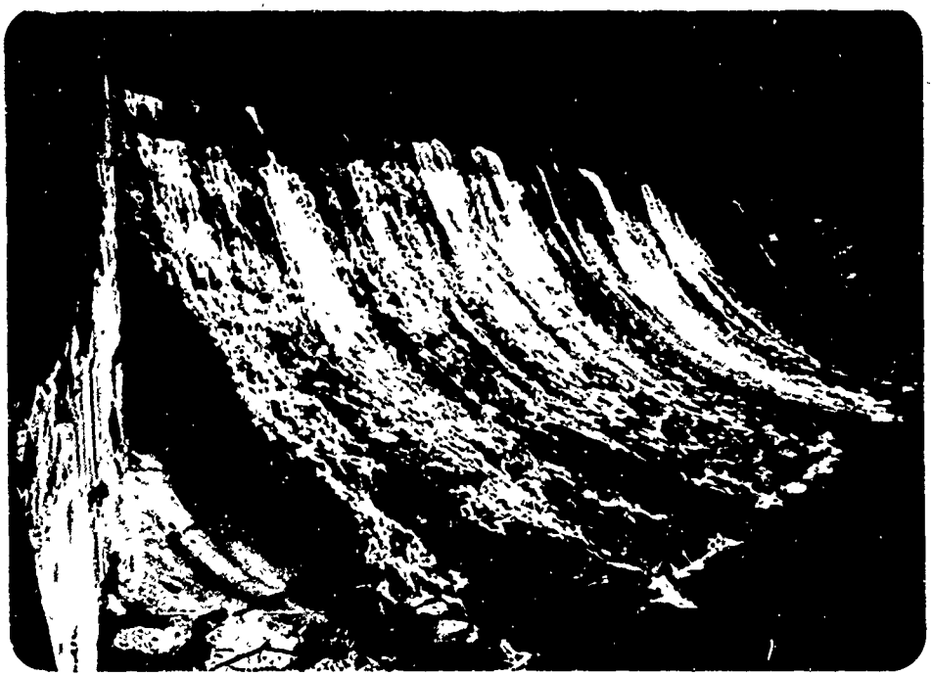
2. Monitor the seepage observed at the toe of the earth embankment at bi-weekly intervals with the aid of weirs. If seepage rates increase appreciably, institute repairs.

3. Remove all trees and brush on the slopes and at the abutments of the earth embankment. Provide a program of periodic cutting and mowing of the embankment surfaces. Backfill the animal burrow on the downstream slope.

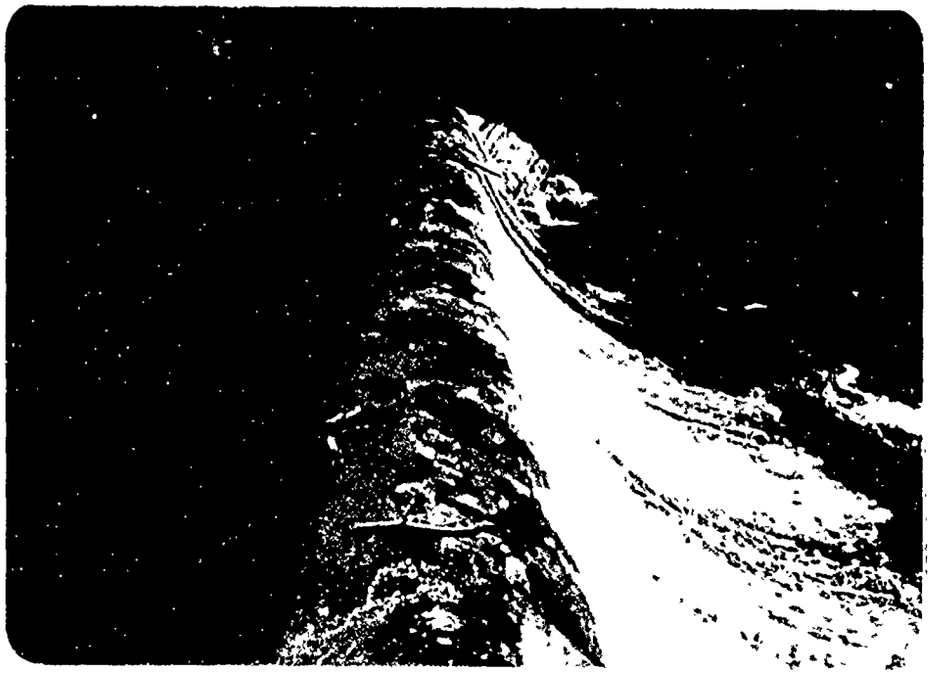
4. Provide a program of periodic inspection and maintanance of the dam and appurtenances, including yearly operation and lubrication of the reservoir drain system, and monitoring of the sedimentation behind the spillway. Document this information for future reference. Also develop an emergency action plan.

APPENDIX A

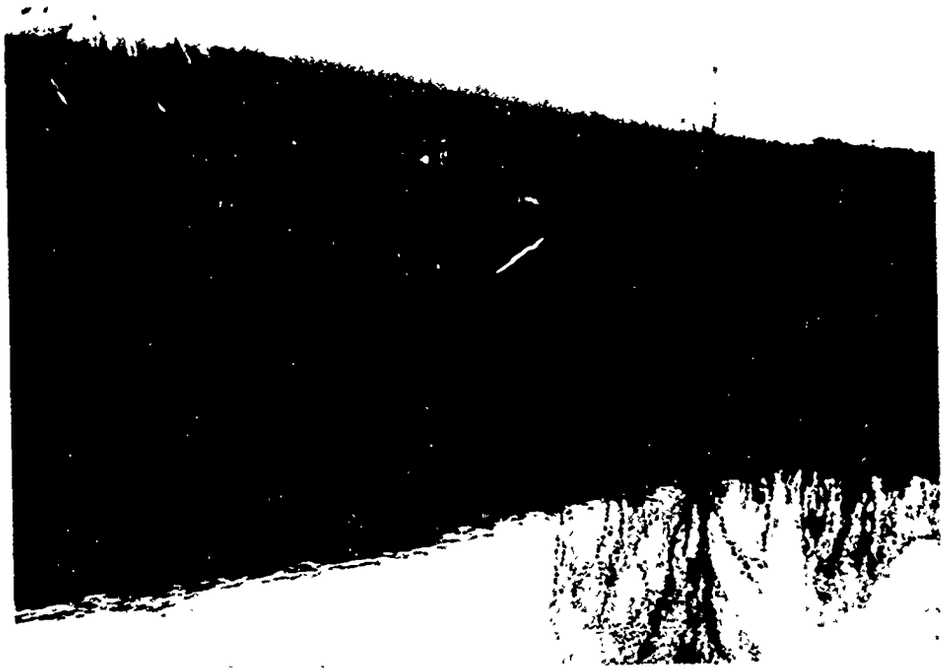
PHOTOGRAPHS



Spillway
Note deteriorated Concrete
Photo #3

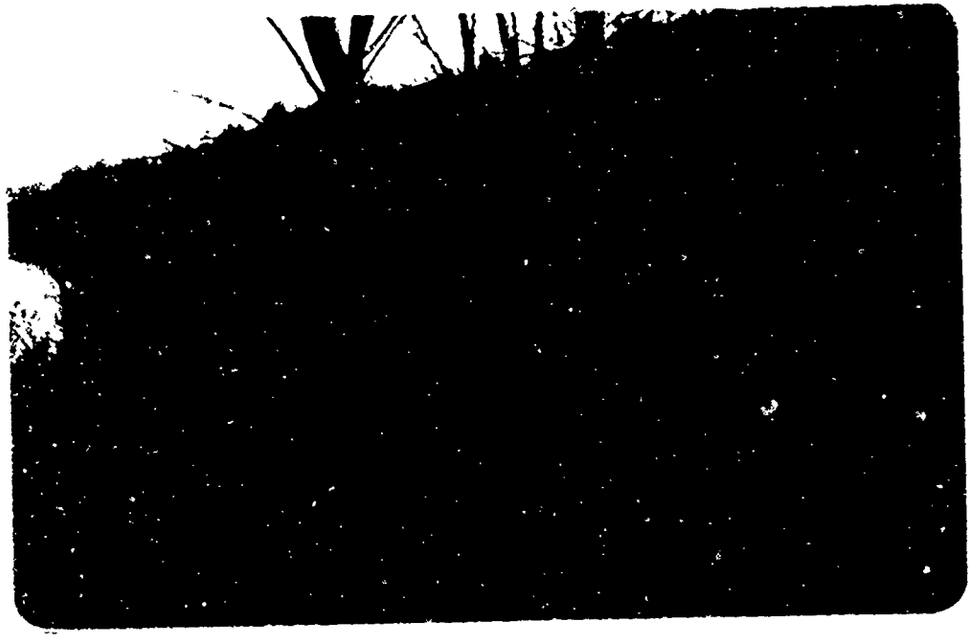


Spillway Crest
Photo #4



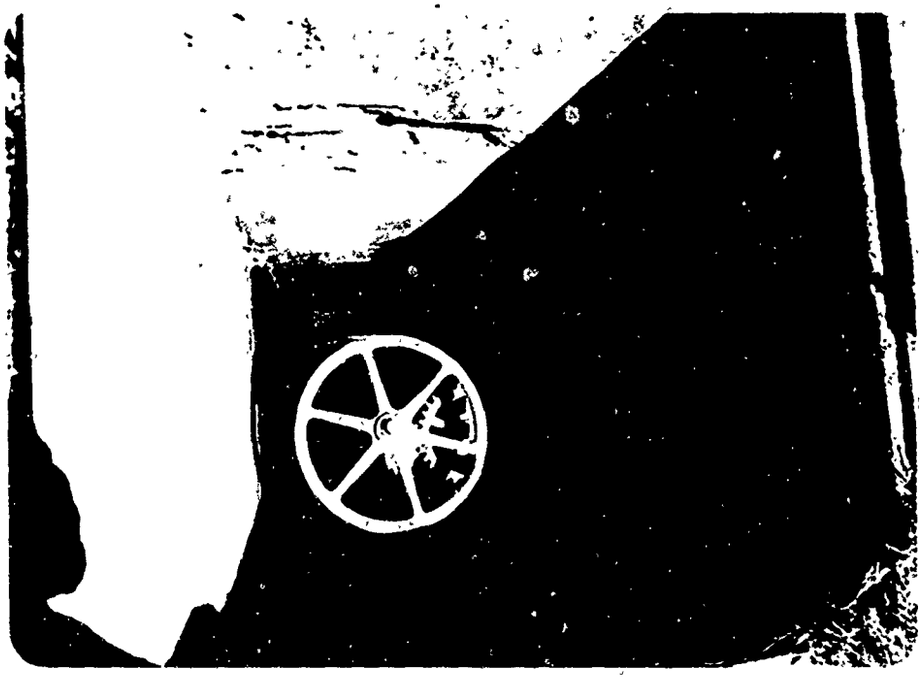
Upstream Face of Embankment
Photo #5

Embankment Core Wall
Photo #6



Embankment viewed from
right abutment
Photo #7

Top of Core Wall
Photo #8



Reservoir Drain Valve
Photo #9

Right Spillway Buttress Wall
Note deterioration
Photo #10

Seepage at Toe of Embankment
Photo #11

Outlet of Seepage from Toe
Photo #12

Concentrated Seepage Points at toe of
Earth Embankment
Photo #13

APPENDIX B

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Lake Jefferson

Fed. I.D. # 205 DEC Dam No. 147C-766

River Basin Delaware

Location: Town Callicoon County Sullivan

Stream Name E. Branch Callicoon Ck.

Tributary of Callicoon Ck. & Delaware R.

Latitude (N) 41° 46.6' Longitude (W) 74° 55.5'

Type of Dam Ogee spillway 160', Earthembankment 153'

Hazard Category "C" High

Date(s) of Inspection 11/16/79

Weather Conditions Partly Cloudy, Feather

Reservoir Level at Time of Inspection 2 inches ± over spillway

b. Inspection Personnel J. C. Vaitch, R. P. McCamley

L. Groupp

c. Persons Contacted (Including Address & Phone No.)

Louis Groupp - owner

Lake Jefferson Hotel, Jeffersonville NY 12748

(914) 482-5283

d. History:

Date Constructed 1922 - 1927 Date(s) Reconstructed ——

Designer Joseph B Ridler 1922, Neal Sherwood 1927

Constructed By Clarke Waterford Power 1922, Lake Jefferson Inc. 1927

Owner Louis Groupp

2) **Embankment**

a. Characteristics

(1) Embankment Material Glacial Till

(2) Cutoff Type Concrete to bedrock or Hardpan

(3) Impervious Core ———

(4) Internal Drainage System none

(5) Miscellaneous

b. Crest

(1) Vertical Alignment good

(2) Horizontal Alignment good

(3) Surface Cracks none evident

(4) Miscellaneous

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1:2.5

(2) Undesirable Growth or Debris, Animal Burrows

numerous trees

(3) Sloughing, Subsidence or Depressions

none

(4) Slope Protection none evident

(5) Surface Cracks or Movement at Toe unobservable

d. Downstream Slope

(1) Slope (Estimate - V:H) 1:2

(2) Undesirable Growth or Debris, Animal Burrows 1 animal burrow @ 15 feet from crest, numerous trees & brush on slope

(3) Sloughing, Subsidence or Depressions none evident

(4) Surface Cracks or Movement at Toe none evident

(5) Seepage at toe a 5 gpm from swale area at abutment (possibly from septic or electrical substructure - unlabeled), @ 5 gpm seeping from toe at 3 locations @ 5 to 30 feet from spillway exit - no flow but moist soil and a little gray sediment surrounding seepage points

(6) External Drainage System (Ditches, Trenches; Blanket) none

(7) Condition Around Outlet Structure under water unobservable

(8) Seepage Beyond Toe none evident

e. Abutments - Embankment Contact

[illegible] no visible cracks or evidence of sloughing downstream toe below water surface

(1) Erosion at Contact none observed

(2) Seepage Along Contact none observed

3) Drainage System

a. Description of System none

b. Condition of System

c. Discharge from Drainage System

4) Instrumentation (Momumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.)

none

5) **Reservoir**

a. Slopes [illegible]

b. Sedimentation [illegible]

c. Unusual Conditions Which Affect Dam

6) **Area Downstream of Dam**

a. Downstream Hazard (No. of Homes, Highways, etc.) Village of Jamesville < 1 mile from dam

b. Seepage, Unusual Growth some minor debris & trees

c. Evidence of Movement Beyond Toe of Dam

none

d. Condition of Downstream Channel adequate

7) **Spillway(s) (Including Discharge Conveyance Channel)**

a. General concrete covered masonry construction

shape : ogee

b. Condition of Service Spillway deterioration of concrete

covering of spillway, cracks & breaks

c. Condition of Auxiliary Spillway _____

Good

d. Condition of Discharge Conveyance Channel _____

adequate

8) Reservoir Drain/Outlet

Type: Pipe ✓ Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other Cast Iron

Size: 30" Length unknown

Invert Elevations: Entrance ≈ 24 feet below crest of spillway Exit _____

Physical Condition (Describe): Unobservable ✓

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve ✓ Uncontrolled _____

Operation: Operable ✓ Inoperable _____ Other _____

Present Condition (Describe): _____

operates periodically by owner / underwater unobservable

9) **Structural**

a. **Concrete Surfaces** deterioration of concrete covering on spillway, minor cracking + deterioration of cap concrete on cut-off wall (earth embankment sections against walls of spillway, deteriorated)

b. **Structural Cracking** minor in cut-off wall

c. **Movement - Horizontal & Vertical Alignment (Settlement)** none evident

d. **Junctions with Abutments or Embankments** adequate - some deterioration of concrete

e. **Drains - Foundation, Joint, Face** none

f. **Water Passages, Conduits, Sluices** operational - measuring drain

g. **Seepage or Leakage** at toe of earth embankment flow over spillway inhibited through inspection of spillway

h. Joints - Construction, etc. minor deterioration

i. Foundation assumed to be bedrock for spillway

j. Abutments see deterioration of wingwalls

k. Control Gates operational

l. Approach & Outlet Channels outlet adjacent approach is experiencing sedimentation

m. Energy Dissipators (Plunge Pool, etc.) none

n. Intake Structures none

o. Stability appears adequate

p. Miscellaneous

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)

a. Description and Condition

Dam -
original plans called for a Power house
but was never built

APPENDIX C

HYDROLOGIC / HYDRAULIC

ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	1090	115.	890.
2) Design High Water (Max. Design Pool)	—	—	—
3) Auxiliary Spillway Crest	—	—	—
4) Pool Level with Flashboards	—	—	—
5) Service Spillway Crest	1081	48.	420.

DISCHARGES

	Volume (cfs)
1) Average Daily	60. ±
2) Spillway @ Maximum High Water	15,965
3) Spillway @ Design High Water	—
4) Spillway @ Auxiliary Spillway Crest Elevation	—
5) Low Level Outlet @ 1081	50 cfs.
6) Total (of all facilities) @ Maximum High Water	15,500 cfs.
7) Maximum Known Flood	4375 cfs (Reduced from gage @ Cullicoon. Aug. 17, 1941)
8) At Time of Inspection	35 cfs.

CREST: ELEVATION: 1081.0

Type: masonry, ogee section

Width: – Length: 160'

Spillover –

Location DAM

SPILLWAY:

SERVICE		AUXILIARY
1081.0	Elevation	–
masonry, ogee section	Type	–
–	Width	–
	Type of Control	
✓	Uncontrolled	–
	Controlled:	
–	Type (Flashboards; gate)	–
–	Number	–
–	Size/Length	–
	Invert Material	–
	Anticipated Length of operating service	–
	Chute Length	–
Approx 1:1 slope to crest.	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	–

HYDROMETEROLOGICAL GAGES:

Type : Water-stage recorder, Concrete control

Location: #01427500 Callicoon Creek @ Callicoon NY (DA = 111 mi.²)

Records:

Date - Aug 17, 1947 ht. 9.68'

Max. Reading - 16,000 cfs. (for 30.34 mi.² Q = 4375 cfs.)

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

Method of Controlled Releases (mechanisms):

low level outlet.

30" pipe.

DRAINAGE AREA: 30.3 MI.^{2}

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Woods, open field, little residential devel., except on water

Terrain - Relief: two basins: one steep, well drained, another typically flat & swampy

Surface - Soil: Unknown Soils of glacial till, generally at thin cover

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

No planned alterations, two basins, see Relief.

Potential Sedimentation problem areas (natural or man-made; present or future)

ongoing sediment problem - heavy silting to spillway crest.

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

many homes & cottages close to Lake Jefferson

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: None

Elevation: ———

Reservoir:

Length @ Maximum Pool 1.2 (Miles)

Length of Shoreline (@ Spillway Crest) 3.0 (Miles)

```
*************************************                              **********************************
FLOOD HYDROGRAPH PACKAGE (HEC-1)                                   NEW YORK STATE
DAM SAFETY VERSION       JULY 1978                                 DEPT OF ENVIRONMENTAL CONSERVATION
  LAST MODIFICATION  26 FEB 79                                     FLOOD PROTECTION BUREAU
  MODIFIED FOR ...      APR 79
*************************************                              **********************************
            A1   LAKE JEFFERSON
            A2   PHASE I
            A3   PMF
            B      200       0      30       0       0       0       0       0       0       0
            B1       5
            J        1       2       1
            J1      .5       1
            K        0       1                       2               1
            K1   INFLOW TO RESERVOIR FROM BASIN A, EAST BRANCH CALLICOON CK.
            M        1       1   18.16           30.34                                   1
            P        0    21.5      98     110     121     129
            T                                                        1      .1
            W     6.70    .625
            X     -2.0    -.05       1
            K        0       1                       2               1
            K1   INFLOW TO RESERVOIR FROM BASIN B, BRISCOE CREEK
            M        1       1   12.16           30.34                                   1
            P        0    21.5      98     110     121     129
            T                                                        1      .1
            W      6.9    .625
            X     -2.0    -.05       1
            K        2       1                       2               1
            K1   COMBINE HYDROGRAPHS
            K        1       1                       2               1
            K1   ROUTE THROUGH LAKE JEFFERSON
            Y                                1       1
            Y1       1                                         -1081.      -1
            Y4    1081    1083    1085    1087    1089    1091    1093    1095
            Y5       0    1920    4580    8420   12960   18115   23810   30000
            $S       0     2.0    18.3    59.8   141.8   302.0    597.
            $E    1055    1060    1065    1070    1075    1080    1085
```

PRINTOUT OF SEQUENCE OF STREAM NETWORK CALCULATIONS

[illegible] HYDROGRAPH AT	1
RUNOFF HYDROGRAPH AT	1
COMBINE 2 HYDROGRAPHS AT	1
ROUTE HYDROGRAPH TO	1
END OF NETWORK	

NEW YORK STATE
DEPT OF ENVIRONMENTAL CONSERVATION
FLOOD PROTECTION BUREAU

JOB SPECIFICATION

IDAY	IHR	MIN	METRC	IPLT	IPRT	NSTAN
0	0	0	0	0	0	0

JUPER	IWT	LKOPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 2 LRTIO= 1
RTIOS= 0.83 1.00

SUB-AREA RUNOFF COMPUTATION

INFLOW TO RESERVOIR FROM BASIN AT EAST BRANCH CALLICOON CR.

ISTAT	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	0	2	0	1	0	0

HYDROGRAPH DATA

IHDRO	HUR.	TAREA	SNAP	TAREA	TRSPC	RATIO	ISHOW	ISAME	LOCAL
1	1	1.10	0.	30.34	0.	0.	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.	21.50	99.00	110.00	121.00	129.00	0.	0.

TRSPC COMPUTED BY THE PROGRAM IS 0.955

LOSS DATA

LOSS	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
1	0.	0.	1.00	0.	0.	1.00	1.00	0.10	0.	0.

UNIT HYDROGRAPH DATA
TP= 5.70 CP=0.63 NTA= 0

RECESSION DATA
STRTQ= -2.00 QRCSN= -0.05 RTIOR= 1.00
APPROXIMATE CLARK COEFFICIENTS FROM SNYDER CP AND TP ARE TC=14.67 AND R=12.33 INTERVALS

UNIT HYDROGRAPH 71 END-OF-PERIOD ORDINATES, LAG= 6.67 HOURS, CP= 0.63 VOL= 1.00

2.	9.	17.	231.	397.	520.	648.	777.	894.	988.
1065.	1104.	1134.	1133.	1094.	1022.	942.	869.	801.	738.
681.	626.	577.	534.	492.	454.	418.	386.	356.	328.
302.	279.	257.	237.	219.	202.	186.	171.	158.	146.
134.	124.	114.	105.	97.	90.	83.	76.	70.	65.
60.	55.	51.	47.	43.	40.	37.	34.	31.	29.
27.	24.	23.	21.	19.	18.	16.	15.	14.	13.
12.	11.	11.	9.						

END-OF-PERIOD FLOW

HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	2.30	101	0.	0.	0.	11017.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	3.00	102	0.	0.	0.	10221.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	3.30	103	0.	0.	0.	9479.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	4.00	104	0.	0.	0.	8786.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	4.30	105	0.	0.	0.	8139.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	5.00	106	0.	0.	0.	7533.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	5.30	107	0.	0.	0.	6968.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	6.00	108	0.	0.	0.	6440.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	6.30	109	0.	0.	0.	5948.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	7.00	110	0.	0.	0.	5490.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	7.30	111	0.	0.	0.	5066.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	8.00	112	0.	0.	0.	4674.
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	9.30	115	0.	0.	0.	3672.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	10.00	116	0.	0.	0.	3388.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	10.30	117	0.	0.	0.	3127.
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	11.30	119	0.	0.	0.	2664.
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	16.30	129	0.	0.	0.	1203.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.03	17.00	130	0.	0.	0.	1112.
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	1.00	146	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	1.30	147	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	2.00	148	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	2.30	149	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	3.00	150	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	3.30	151	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	4.00	152	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	4.30	153	0.	0.	0.	924.
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	7.00	158	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	7.30	159	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	8.00	160	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	8.30	161	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	9.00	162	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	9.30	163	0.	0.	0.	924.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.04	10.00	164	0.	0.	0.	924.

[illegible]	[illegible]	65	0.13	0.13	0.05	380.	1.04	10.30	165	0.	0.	0.	924.
[illegible]	[illegible]	66	0.13	0.13	0.05	450.	1.04	11.00	166	0.	0.	0.	924.
[illegible]	[illegible]	67	0.13	0.13	0.05	534.	1.04	11.30	167	0.	0.	0.	924.
[illegible]	[illegible]	68	0.13	0.13	0.05	631.	1.04	12.00	168	0.	0.	0.	924.
[illegible]	[illegible]	69	0.13	0.13	0.05	741.	1.04	12.30	169	0.	0.	0.	924.
[illegible]	[illegible]	70	0.13	0.13	0.05	862.	1.04	13.00	170	0.	0.	0.	924.
[illegible]	[illegible]	71	0.13	0.13	0.05	989.	1.04	13.30	171	0.	0.	0.	924.
[illegible]	[illegible]	72	0.13	0.13	0.05	1122.	1.04	14.00	172	0.	0.	0.	924.
[illegible]	[illegible]	73	0.88	0.83	0.05	1273.	1.04	14.30	173	0.	0.	0.	924.
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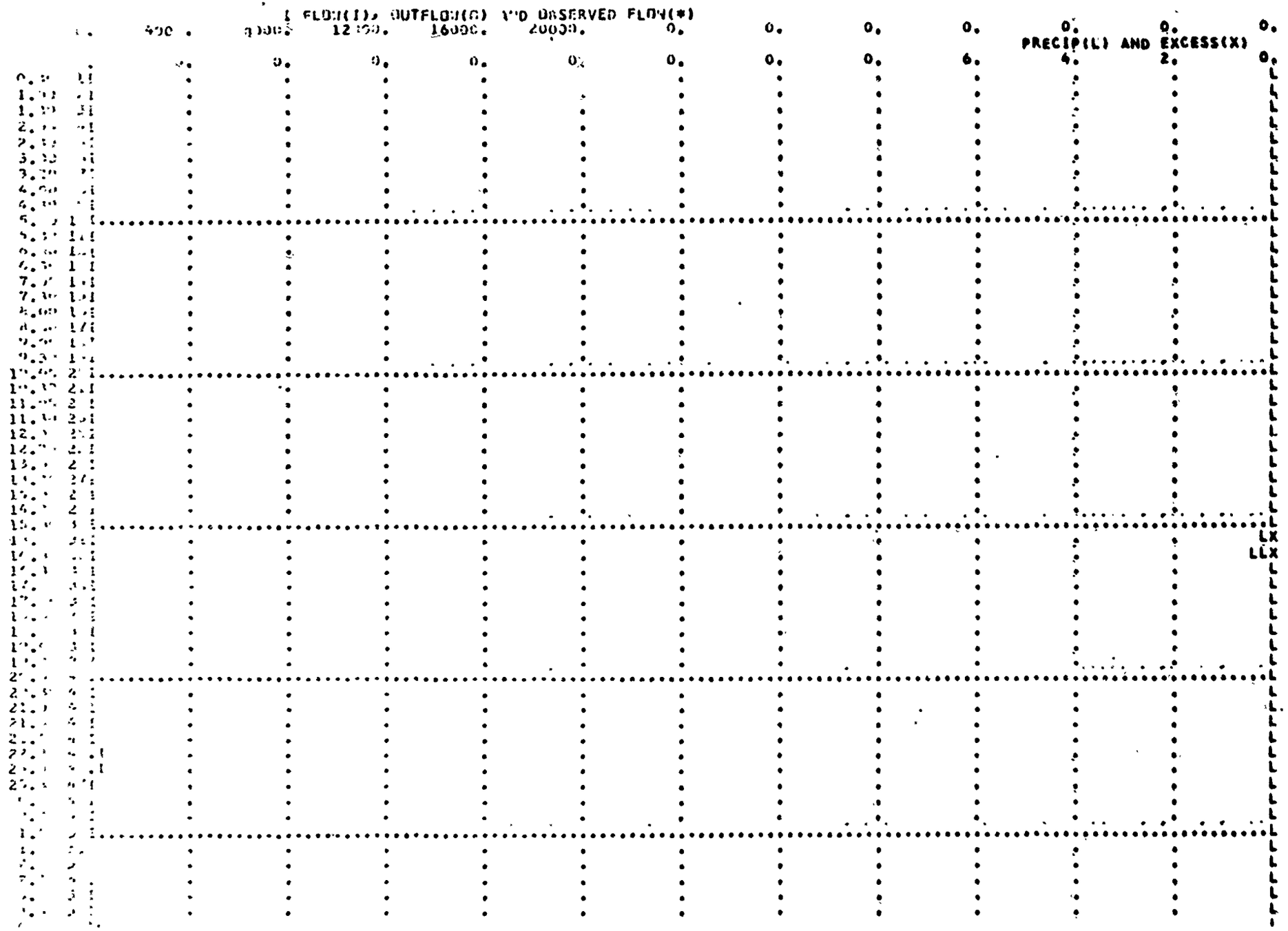
[illegible]	[illegible]	75	1.06	1.01	0.05	1725.	1.04	15.30	175	0.	0.	0.	924.
[illegible]	[illegible]	76	1.06	1.01	0.05	2059.	1.04	16.00	176	0.	0.	0.	924.
[illegible]	[illegible]	77	1.32	1.27	0.05	2485.	1.04	16.30	177	0.	0.	0.	924.
[illegible]	[illegible]	78	1.32	1.27	0.05	3025.	1.04	17.00	178	0.	0.	0.	924.
[illegible]	[illegible]	79	1.61	1.56	0.05	3696.	1.04	17.30	179	0.	0.	0.	924.
[illegible]	[illegible]	80	5.09	5.04	0.05	4509.	1.04	18.00	180	0.	0.	0.	924.
[illegible]	[illegible]	81	1.23	1.18	0.05	5746.	1.04	18.30	181	0.	0.	0.	924.
[illegible]	[illegible]	82	1.23	1.18	0.05	7187.	1.04	19.00	182	0.	0.	0.	924.
[illegible]	[illegible]	83	0.97	0.92	0.05	8734.	1.04	19.30	183	0.	0.	0.	924.
[illegible]	[illegible]	84	0.97	0.92	0.05	10376.	1.04	20.00	184	0.	0.	0.	924.
[illegible]	[illegible]	85	0.10	0.05	0.05	12050.	1.04	20.30	185	0.	0.	0.	924.
[illegible]	[illegible]	86	0.10	0.05	0.05	13678.	1.04	21.00	186	0.	0.	0.	924.
[illegible]	[illegible]	87	0.10	0.05	0.05	15173.	1.04	21.30	187	0.	0.	0.	924.
[illegible]	[illegible]	88	0.10	0.05	0.05	16448.	1.04	22.00	188	0.	0.	0.	924.
[illegible]	[illegible]	89	0.10	0.05	0.05	17423.	1.04	22.30	189	0.	0.	0.	924.
[illegible]	[illegible]	90	0.10	0.05	0.05	18089.	1.04	23.00	190	0.	0.	0.	924.
[illegible]	[illegible]	91	0.10	0.05	0.05	18440.	1.04	23.30	191	0.	0.	0.	924.
[illegible]	[illegible]	92	0.10	0.05	0.05	18475.	1.05	0.	192	0.	0.	0.	924.
[illegible]	[illegible]	93	0.10	0.05	0.05	18201.	1.05	0.30	193	0.	0.	0.	924.
[illegible]	[illegible]	94	0.10	0.05	0.05	17610.	1.05	1.00	194	0.	0.	0.	924.
[illegible]	[illegible]	95	0.10	0.05	0.05	16759.	1.05	1.30	195	0.	0.	0.	924.
[illegible]	[illegible]	96	0.10	0.05	0.05	15709.	1.05	2.00	196	0.	0.	0.	924.
[illegible]	[illegible]	97	0.	0.	0.	14792.	1.05	2.30	197	0.	0.	0.	924.
[illegible]	[illegible]	98	0.	0.	0.	13771.	1.05	3.00	198	0.	0.	0.	924.
[illegible]	[illegible]	99	0.	0.	0.	12792.	1.05	3.30	199	0.	0.	0.	924.
[illegible]	[illegible]	100	0.	0.	0.	11872.	1.05	4.00	200	0.	0.	0.	924.
									SUM	23.18	19.49	3.69	513328.
										(589.)	(495.)	(94.)	(14535.83)

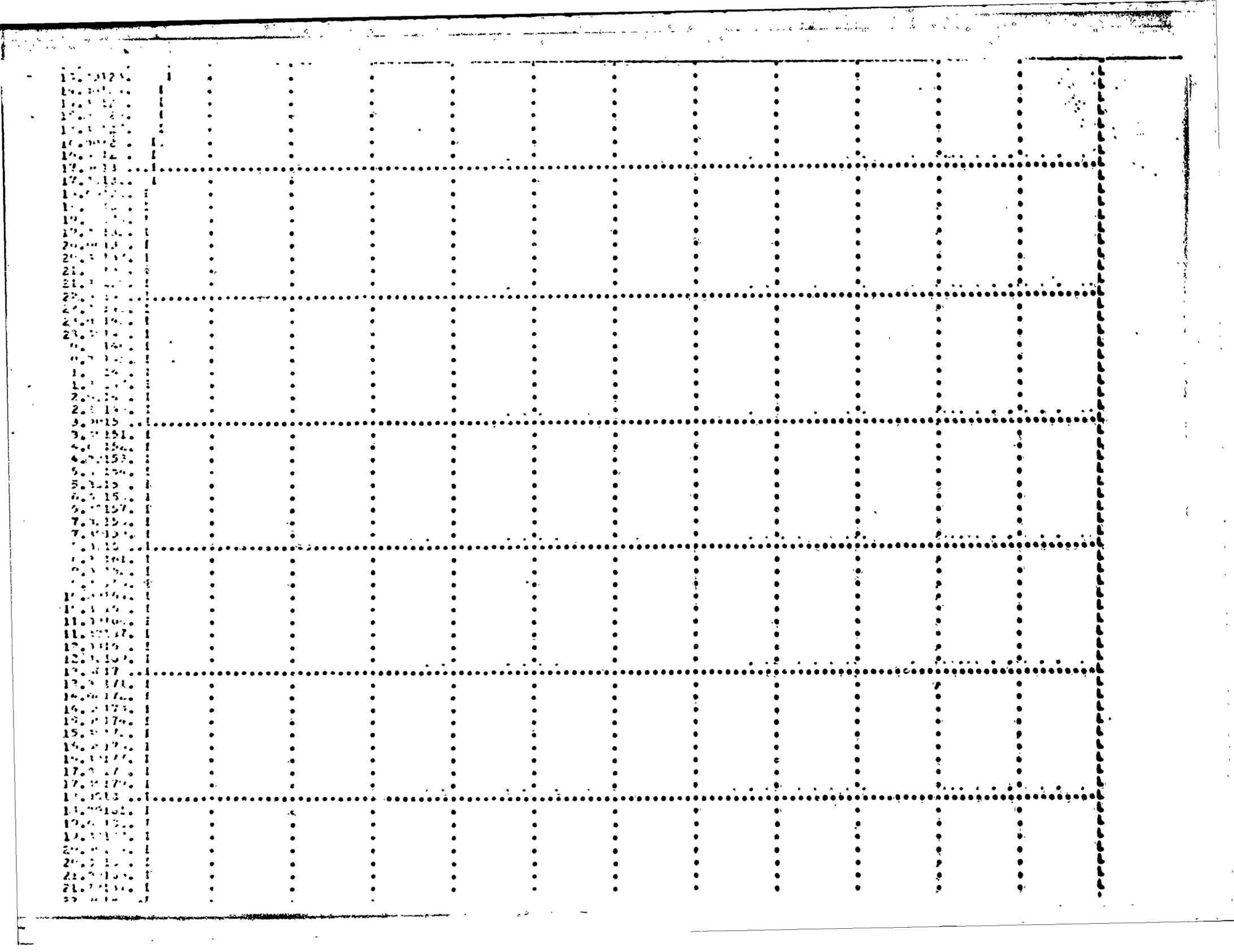
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	18475.	16743.	8706.	3530.	512840.
CMS	523.	474.	249.	100.	14522.
INCHES		5.50	15.00	21.70	21.89
CM		217.84	457.20	551.07	556.05
AC-FT		33?2.	17428.	21002.	21192.
THOUS CU M		19241.	21497.	25906.	26140.

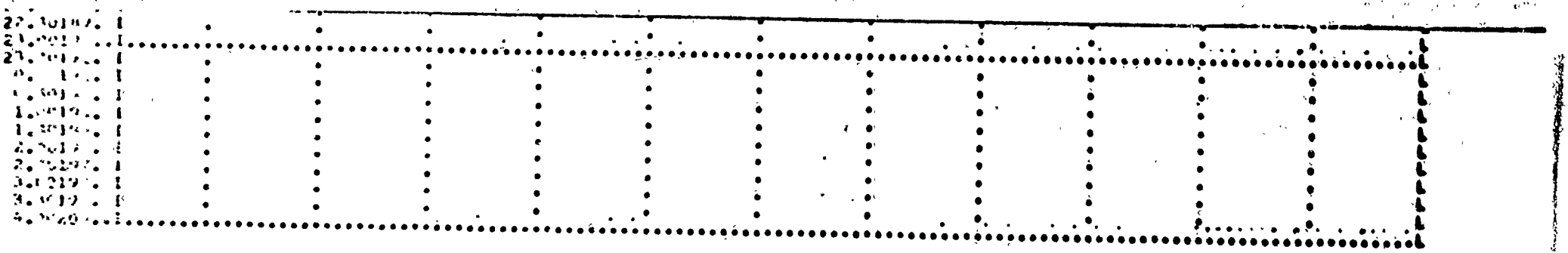
fly=

STATION 1

(FLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)







HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

1[illegible]	14.	17.	19.	17.	18.	18.	18.	18.	18.
1[illegible]	14.	17.	19.	17.	18.	18.	18.	18.	18.
1[illegible]	14.	17.	19.	17.	18.	18.	18.	18.	18.
1[illegible]	17.	21.	25.	31.	38.	46.	55.	64.	73.
8[illegible]	8[illegible]	94.	98.	101.	101.	99.	95.	90.	86.
5[illegible]	72.	7[illegible]	78.	79.	82.	86.	91.	97.	103.
111.	123.	141.	162.	190.	225.	267.	316.	371.	431.
495.	561.	637.	734.	863.	1029.	1243.	1512.	1848.	2299.
[illegible]	5[illegible]	[illegible]	5166.	6025.	6939.	7589.	8224.	8711.	9044.
822[illegible]	9237.	91[illegible]	8805.	8379.	7394.	7391.	6886.	6396.	5936.
5[illegible]	5111.	4749.	4393.	4059.	3767.	3494.	3220.	2974.	2745.
2931.	2537.	2159.	1989.	1836.	1694.	1564.	1443.	1332.	1230.
1135.	1048.	968.	894.	825.	762.	704.	651.	601.	556.
514.	475.	442.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.
462.	462.	462.	462.	462.	462.	462.	462.	462.	462.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	9227.	8372.	4393.	1765.	256420.
CMS	261.	237.	124.	50.	7261.
INCHES		4.29	9.00	10.85	10.95
[illegible]		105.92	220.64	275.54	278.02
AC-FT		4151.	8714.	10501.	10596.
THOUS CU M		5120.	10748.	12953.	13070.

HYDROG. APH AT STA 1 FOR PLAN 1, RTIO 2

3[illegible]	3[illegible]	3[illegible]	36.	36.	36.	36.	36.	36.	36.
3[illegible]	3[illegible]	3[illegible]	36.	36.	36.	36.	36.	36.	36.
3[illegible]	3[illegible]	3[illegible]	36.	36.	36.	36.	36.	36.	36.
3[illegible]	3[illegible]	4[illegible]	50.	61.	75.	91.	109.	128.	146.
162.	177.	19[illegible]	197.	201.	201.	197.	189.	180.	171.
169.	159.	158.	156.	159.	164.	172.	182.	193.	206.
22[illegible]	24[illegible]	279.	324.	389.	450.	534.	631.	741.	862.
3[illegible]	1124.	1273.	1468.	1725.	2059.	2485.	3025.	3696.	4599.
5749.	7147.	8734.	10370.	12359.	13678.	15178.	16448.	17423.	18089.
1[illegible]	19[illegible]	19[illegible]	17616.	16759.	15793.	14782.	13771.	12792.	11872.
11317.	10221.	9477.	8736.	8139.	7533.	6968.	6440.	5948.	5490.
5069.	4574.	4312.	3979.	3672.	3398.	3127.	2886.	2664.	2459.
2271.	2[illegible]	1[illegible]	1787.	1651.	1525.	1409.	1302.	1203.	1112.
1[illegible]	[illegible]	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.
924.	924.	924.	924.	924.	924.	924.	924.	924.	924.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1[illegible]475.	16713.	8786.	3530.	512840.
CMS	523.	474.	249.	100.	14522.
INCHES		4.56	10.00	21.70	21.89
[illegible]		217.34	457.2[illegible]	551.07	556.05
AC-FT		8302.	17426.	21002.	21192.
THOUS CU M		10241.	21497.	25906.	26140.

SUB-AREA RUNOFF COMPUTATION

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	0	0	6	2	0	1	0	0

HYDROGRAPH DATA

IHOUR	IMIN	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISHOW	ISAME	LOCAL
1	0	12.10	0.	30.24	0.	0.	0	1	0

PRECIP DATA

SPFE	R6	R12	R24	R48	R72	R96
0.	31.00	97.00	115.00	121.00	129.00	0.	0.

THE C... FOR THE P... IS 0.63

LOSS DATA

LOSS	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
2	0.	0.	1.0	0.	0.	1.00	1.00	0.10	0.	0.

UNIT HYDROGRAPH DATA

TP= 6.90 CP=0.63 NTA= 0

RECESSION DATA

STRTQ= -2.00 QRCSN= -0.05 RTIOR= 1.00

APPROXIMATE SUB-AREA UNIT HYDROGRAPH FOR ... SQUARE MILES OF AREA WITH TC=15.31 AND R=12.80 INTERVALS

...IT ...RAPH P... END-OF-PERIOD ORDINATES, LAG= 6.94 HOURS, CP= 0.63 VOL= 1.00

14.	5.	1.7.	171.	242.	317.	395.	476.	551.	615.
5...	...1.	72...	733.	725.	691.	641.	593.	549.	507.
4...3.	...3.	4...1.	371.	34...	317.	294.	272.	251.	232.
21...	1...1.	1...1.	170.	157.	145.	134.	124.	115.	106.
9...1.	7...1.	6...1.	78.	72.	67.	62.	57.	53.	49.
6...5.	4...2.	3...1.	36.	33.	31.	28.	26.	24.	22.
2...1.	1...7.	1...3.	16.	15.	14.	13.	12.	11.	10.
...9.	...6.	...4.	7.	7.	6.				

END-OF-PERIOD FLOW

...OUR	MIN	PERIOD	RAIN	EXCS	LOSS	COMP Q	DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1...1	...56	1	0.00	...0.	0.00	24.	1.03	2.30	101	0.	0.	0.	7605.
1...1	1.00	2	0.00	...0.	0.00	24.	1.03	3.00	102	0.	0.	0.	7075.
1...1	1.30	3	0.00	...0.	0.00	24.	1.03	3.30	103	0.	0.	0.	6580.
1...1	2.00	4	0.00	...0.	0.00	24.	1.03	4.00	104	0.	0.	0.	6117.
1...1	2.30	5	0.00	...0.	0.00	24.	1.03	4.30	105	0.	0.	0.	5683.
1...1	3.00	6	0.00	...0.	0.00	24.	1.03	5.00	106	0.	0.	0.	5277.
1...1	3.30	7	0.00	...0.	0.00	24.	1.03	5.30	107	0.	0.	0.	4897.
1...1	4.00	8	0.00	...0.	0.00	24.	1.03	6.00	108	0.	0.	0.	4540.
1...1	4.30	9	0.00	...0.	0.00	24.	1.03	6.30	109	0.	0.	0.	4207.
1...1	5.00	10	0.00	...0.	0.00	24.	1.03	7.00	110	0.	0.	0.	3896.
1...1	5.30	11	0.00	...0.	0.00	24.	1.03	7.30	111	0.	0.	0.	3606.
1...1	6.00	12	0.00	...0.	0.00	24.	1.03	8.00	112	0.	0.	0.	3337.
1...1	6.30	13	0.01	...0.	0.01	24.	1.03	8.30	113	0.	0.	0.	3088.
1...1	7.00	14	0.01	...0.	0.01	24.	1.03	9.00	114	0.	0.	0.	2858.
1...1	7.30	15	0.01	...0.	0.01	24.	1.03	9.30	115	0.	0.	0.	2645.
1...1	8.00	16	0.01	...0.	0.01	24.	1.03	10.00	116	0.	0.	0.	2448.
1...1	8.30	17	0.01	...0.	0.01	24.	1.03	10.30	117	0.	0.	0.	2265.
1...1	9.00	18	0.01	...0.	0.01	24.	1.03	11.00	118	0.	0.	0.	2097.
1...1	9.30	19	0.01	...0.	0.01	24.	1.03	11.30	119	0.	0.	0.	1941.
1...1	10.00	20	0.01	...0.	0.01	24.	1.03	12.00	120	0.	0.	0.	1797.
1...1	10.30	21	0.01	...0.	0.01	24.	1.03	12.30	121	0.	0.	0.	1664.
1...1	11.00	22	0.01	...0.	0.01	24.	1.03	13.00	122	0.	0.	0.	1541.
1...1	11.30	23	0.01	...0.	0.01	24.	1.03	13.30	123	0.	0.	0.	1427.

		24	0.01		0.01	24.	1.03	14.00	124	0.	0.	0.	1321.
		25				24.	1.03	14.30	125	0.	0.	0.	1224.
		26				24.	1.03	15.00	126	0.	0.	0.	1133.
		27				24.	1.03	15.30	127	0.	0.	0.	1050.
		28				24.	1.03	16.00	128	0.	0.	0.	973.
		29				24.	1.03	16.30	129	0.	0.	0.	901.
		30				24.	1.03	17.00	130	0.	0.	0.	835.
		31				24.	1.03	17.30	131	0.	0.	0.	774.
		32				25.	1.03	18.00	132	0.	0.	0.	718.
		33				26.	1.03	18.30	133	0.	0.	0.	666.
		34				33.	1.03	19.00	134	0.	0.	0.	617.
		35				59.	1.03	19.30	135	0.	0.	0.	601.
		36				48.	1.03	20.00	136	0.	0.	0.	601.
		37				38.	1.03	20.30	137	0.	0.	0.	601.
		38				69.	1.03	21.00	138	0.	0.	0.	601.
		39				80.	1.03	21.30	139	0.	0.	0.	601.
		40				91.	1.03	22.00	140	0.	0.	0.	601.
		41				102.	1.03	22.30	141	0.	0.	0.	601.
		42				112.	1.03	23.00	142	0.	0.	0.	601.
		43				120.	1.03	23.30	143	0.	0.	0.	601.
		44				126.	1.04	0.	144	0.	0.	0.	601.
		45				130.	1.04	0.30	145	0.	0.	0.	601.
		46				131.	1.04	1.00	146	0.	0.	0.	601.
		47				130.	1.04	1.30	147	0.	0.	0.	601.
		48				129.	1.04	2.00	148	0.	0.	0.	601.
		49				121.	1.04	2.30	149	0.	0.	0.	601.
		50				116.	1.04	3.00	150	0.	0.	0.	601.
		51				111.	1.04	3.30	151	0.	0.	0.	601.
		52				108.	1.04	4.00	152	0.	0.	0.	601.
		53				105.	1.04	4.30	153	0.	0.	0.	601.
		54				105.	1.04	5.00	154	0.	0.	0.	601.
		55				106.	1.04	5.30	155	0.	0.	0.	601.
		56				109.	1.04	6.00	156	0.	0.	0.	601.
		57				114.	1.04	6.30	157	0.	0.	0.	601.
		58				120.	1.04	7.00	158	0.	0.	0.	601.
		59				127.	1.04	7.30	159	0.	0.	0.	601.
		60				134.	1.04	8.00	160	0.	0.	0.	601.
		61				144.	1.04	8.30	161	0.	0.	0.	601.
		62				159.	1.04	9.00	162	0.	0.	0.	601.
		63				180.	1.04	9.30	163	0.	0.	0.	601.
		64				208.	1.04	10.00	164	0.	0.	0.	601.
		65				243.	1.04	10.30	165	0.	0.	0.	601.
		66				287.	1.04	11.00	166	0.	0.	0.	601.
		67				338.	1.04	11.30	167	0.	0.	0.	601.
		68				399.	1.04	12.00	168	0.	0.	0.	601.
		69				467.	1.04	12.30	169	0.	0.	0.	601.
		70				543.	1.04	13.00	170	0.	0.	0.	601.
		71				623.	1.04	13.30	171	0.	0.	0.	601.
		72				708.	1.04	14.00	172	0.	0.	0.	601.
		73				804.	1.04	14.30	173	0.	0.	0.	601.
		74				928.	1.04	15.00	174	0.	0.	0.	601.
		75				1091.	1.04	15.30	175	0.	0.	0.	601.
		76				1302.	1.04	16.00	176	0.	0.	0.	601.
		77				1570.	1.04	16.30	177	0.	0.	0.	601.
		78				1906.	1.04	17.00	178	0.	0.	0.	601.
		79				2323.	1.04	17.30	179	0.	0.	0.	601.
		80				2841.	1.04	18.00	180	0.	0.	0.	601.
		81				3515.	1.04	18.30	181	0.	0.	0.	601.
		82				4434.	1.04	19.00	182	0.	0.	0.	601.
		83				5647.	1.04	19.30	183	0.	0.	0.	601.
		84				6475.	1.04	20.00	184	0.	0.	0.	601.
		85				7524.	1.04	20.30	185	0.	0.	0.	601.
		86				8567.	1.04	21.00	186	0.	0.	0.	601.
		87				9545.	1.04	21.30	187	0.	0.	0.	601.
		88				10434.	1.04	22.00	188	0.	0.	0.	601.
		89				11093.	1.04	22.30	189	0.	0.	0.	601.

1.11	21.11	90	0.10	0.05	0.05	11505.	1.04	23.00	190	0.	0.	0.	601.
1.11	21.33	91	0.10	0.05	0.05	11606.	1.04	23.30	191	0.	0.	0.	601.
1.12	22.00	92	0.10	0.05	0.05	11724.	1.05	0.	192	0.	0.	0.	601.
1.12	22.30	93	0.10	0.05	0.05	11831.	1.05	0.30	193	0.	0.	0.	601.
1.13	23.	94	0.10	0.05	0.05	11935.	1.05	1.00	194	0.	0.	0.	601.
1.13	23.30	95	0.10	0.05	0.05	12034.	1.05	1.30	195	0.	0.	0.	601.
1.	0.	96	0.10	0.05	0.05	12133.	1.05	2.00	196	0.	0.	0.	601.
1.	0.30	97	0.	0.	0.	12231.	1.05	2.30	197	0.	0.	0.	601.
1.	1.	98	0.	0.	0.	9414.	1.05	3.00	198	0.	0.	0.	601.
1.13	1.30	99	0.	0.	0.	8791.	1.05	3.30	199	0.	0.	0.	601.
1.13	2.00	100	0.	0.	0.	8173.	1.05	4.00	200	0.	0.	0.	601.

SUM 23.18 19.49 3.69 341816.
(589.)(495.)(94.)(9679.15)

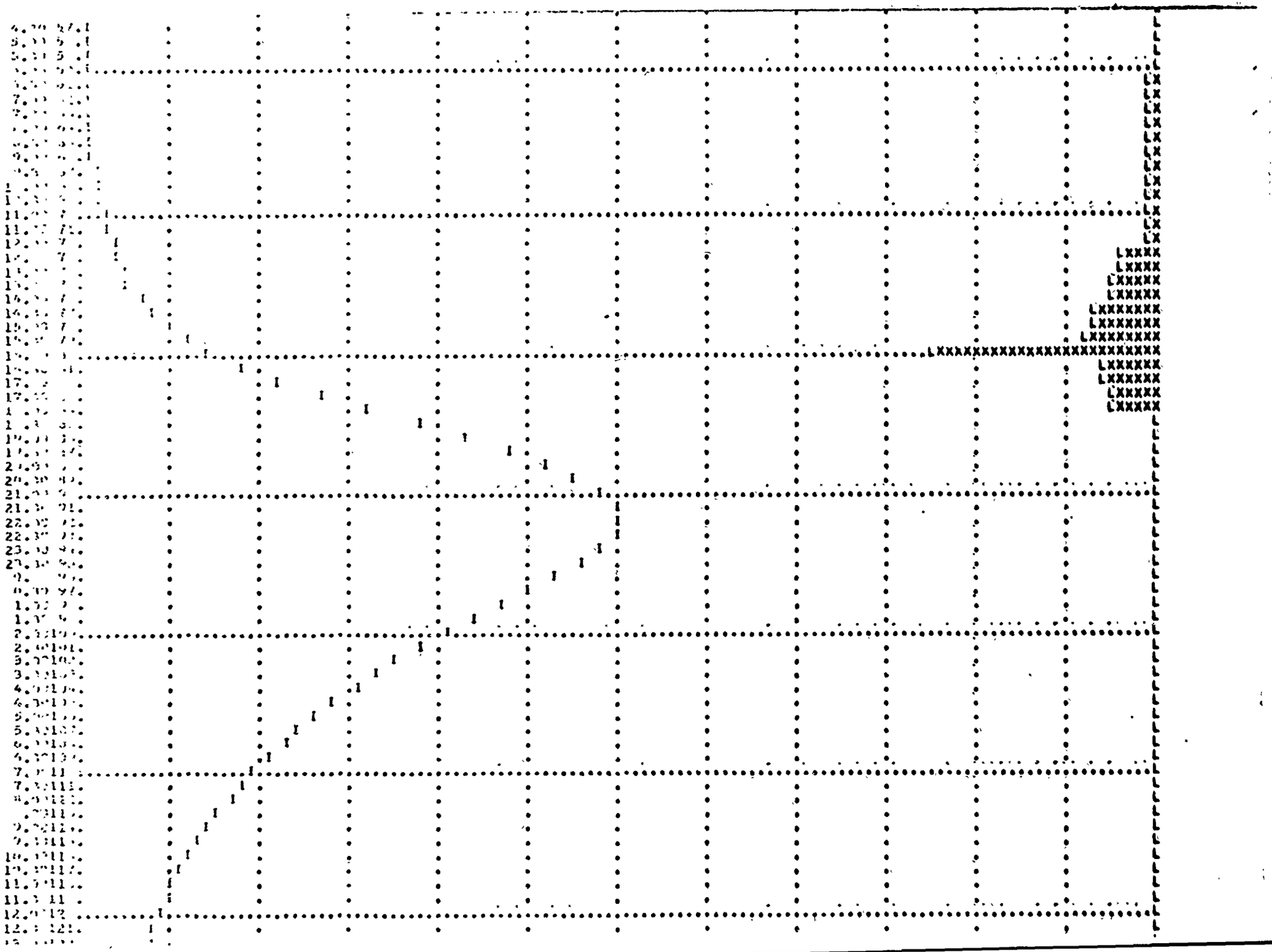
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	12874.	10915.	5869.	2351.	341527.
CMS	364.	310.	166.	67.	9671.
INCHES		4.35	17.90	21.54	21.74
MM		232.13	454.67	547.22	552.10
AC-FT		8492.	11622.	13988.	14113.
THOUS CU M		10478.	14336.	17254.	17408.

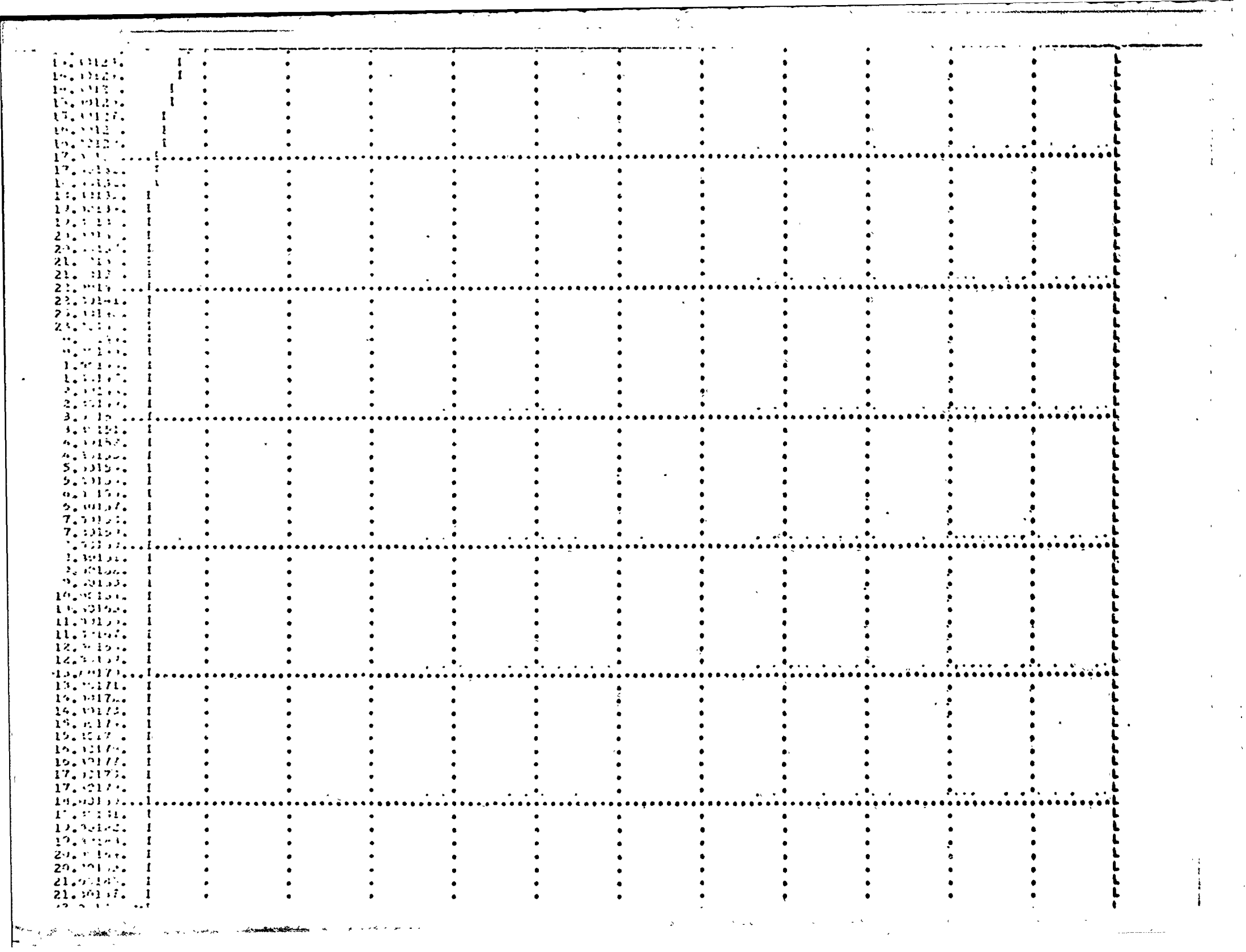
OVER

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)

	2000.	4000.	6000.	8000.	10000.	12000.	14000.	0.	0.	0.	0.	0.
										PRECIP(L) AND EXCESS(X)		
				0.	0.	0.	0.	0.	6.	4.	2.	0.
0.33	1I											L
1.00	2I											L
1.30	3I											L
2.00	4I											L
2.30	5I											L
3.00	6I											L
3.30	7I											L
4.00	8I											L
4.30	9I											L
5.00	10I											L
5.30	11I											L
6.00	12I											L
6.30	13I											L
7.00	14I											L
7.30	15I											L
8.00	16I											L
8.30	17I											L
9.00	18I											L
9.30	19I											L
10.00	20I											L
10.30	21I											L
11.00	22I											L
11.30	23I											L
12.00	24I											L
12.30	25I											L
13.00	26I											L
13.30	27I											L
14.00	28I											L
14.30	29I											L
15.00	30I											L
15.30	31I											LX
16.00	32I											LLX
16.30	33I											L
17.00	34I											L
17.30	35I											L
18.00	36I											L
18.30	37I											L
19.00	38I											L
19.30	39I											L
20.00	40I											L
20.30	41I											L
21.00	42I											L
21.30	43I											L
22.00	44I											L
22.30	45I											L
23.00	46I											L
23.30	47I											L
0.	48I											L
0.30	49I											L
1.00	50I											L
1.30	51I											L
2.00	52I											L
2.30	53I											L
3.00	54I											L





HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

12.	12.	12.	12.	12.	12.	12.	12.	12.	12.
12.	12.	12.	12.	12.	12.	12.	12.	12.	12.
12.	12.	12.	12.	12.	12.	12.	12.	12.	12.
13.	13.	14.	16.	20.	24.	29.	34.	40.	46.
51.	56.	60.	63.	65.	66.	65.	63.	61.	56.
50.	54.	53.	53.	53.	55.	57.	60.	63.	67.
76.	79.	90.	104.	122.	143.	169.	199.	234.	271.
314.	354.	402.	464.	546.	651.	785.	953.	1162.	1440.
1[illegible]	2242.	2723.	3237.	3765.	4283.	4773.	5202.	5546.	5798.
595[illegible]	6112.	5974.	5848.	5625.	5336.	5026.	4707.	4390.	4087.
38[illegible]	3534.	3293.	3059.	2842.	2639.	2448.	2270.	2104.	1948.
1[illegible]	1664.	1544.	1429.	1322.	1224.	1133.	1048.	971.	899.
832.	770.	713.	661.	612.	567.	525.	486.	451.	418.
387.	359.	333.	309.	301.	301.	301.	301.	301.	301.
301.	301.	301.	301.	301.	301.	301.	301.	301.	301.
301.	301.	301.	301.	301.	301.	301.	301.	301.	301.
301.	301.	301.	301.	301.	301.	301.	301.	301.	301.
301.	301.	301.	301.	301.	301.	301.	301.	301.	301.
301.	301.	301.	301.	301.	301.	301.	301.	301.	301.
3[illegible]	301.	301.	301.	301.	301.	301.	301.	301.	301.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	6012.	5448.	2930.	1175.	170763.
CMS	170.	154.	83.	33.	4835.
INCHES		4.18	8.95	10.77	10.87
MM		106.06	227.34	273.61	276.05
AC-FT		2711.	5811.	6994.	7056.
THOUS CU M		3344.	7168.	8627.	8704.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
24.	24.	24.	24.	24.	24.	24.	24.	24.	24.
24.	25.	26.	33.	39.	43.	58.	69.	80.	91.
102.	112.	120.	126.	130.	131.	130.	126.	121.	116.
111.	105.	100.	105.	106.	109.	114.	120.	127.	134.
144.	159.	180.	208.	245.	287.	338.	399.	467.	543.
624.	708.	806.	920.	1091.	1302.	1570.	1906.	2323.	2881.
3013.	4434.	5447.	6475.	7529.	8567.	9545.	10404.	11093.	11595.
119[illegible]	12024.	11952.	11696.	11250.	10673.	10051.	9414.	8781.	8173.
76[illegible]	7073.	6440.	6117.	5683.	5277.	4897.	4540.	4207.	3896.
30[illegible]	3337.	3088.	2858.	2645.	2448.	2265.	2097.	1941.	1797.
16[illegible]	1541.	1427.	1321.	1224.	1133.	1050.	973.	901.	835.
77[illegible]	719.	666.	617.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.
601.	601.	601.	601.	601.	601.	601.	601.	601.	601.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	12024.	10955.	5859.	2351.	341527.
CMS	340.	310.	166.	67.	9671.
INCHES		8.35	17.90	21.54	21.74
MM		212.13	454.67	547.22	552.10
AC-FT		5422.	11622.	13988.	14113.
THOUS CU M		6686.	14336.	17254.	17408.

********** ********** ********** ********** **********

COMBINE HYDROGRAPHS

COMBINE HYDROGRAPHS

ISTAT	IJUMP	ICOMP	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	2	0	0	2	0	1	0	0

SUM OF 2 HYDROGRAPHS AT 1 PLAN 1 RATIO 1

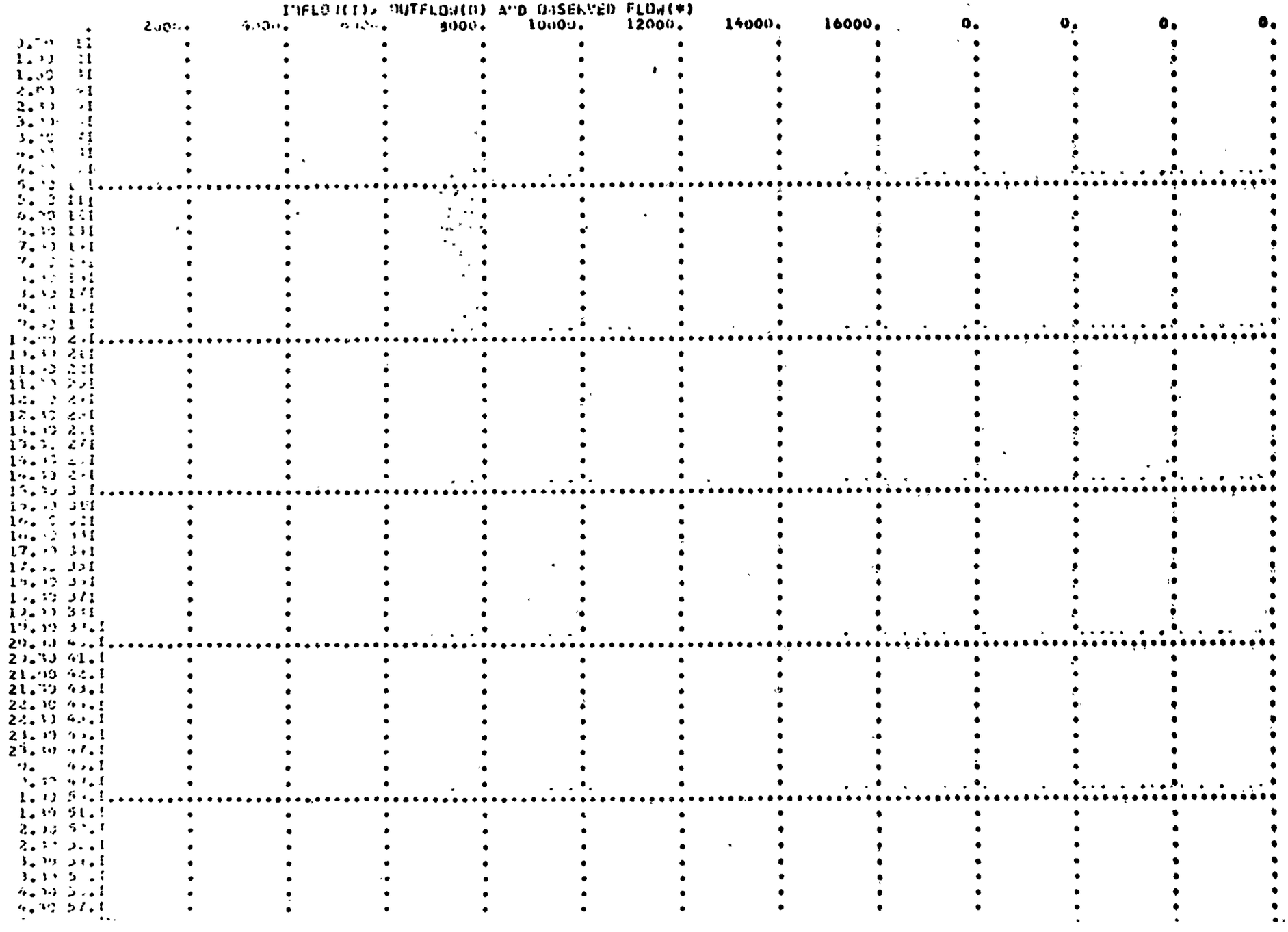
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	30.	30.	30.	31.	30.	30.	30.	30.	30.
31.	31.	31.	41.	53.	62.	75.	89.	104.	119.
134.	146.	156.	161.	165.	165.	164.	158.	151.	143.
134.	133.	131.	131.	133.	137.	143.	151.	160.	170.
180.	202.	227.	256.	312.	368.	436.	515.	604.	702.
809.	915.	1038.	1195.	1409.	1690.	2026.	2465.	3010.	3740.
4729.	5938.	7233.	8428.	9790.	11122.	12361.	13426.	14258.	14842.
15177.	15247.	15277.	14965.	14004.	13231.	12416.	11593.	10786.	10022.
9312.	8641.	8033.	7452.	6911.	6405.	5932.	5490.	5078.	4693.
4332.	4002.	3722.	3418.	3158.	2919.	2696.	2492.	2303.	2128.
1967.	1817.	1681.	1534.	1437.	1329.	1229.	1137.	1052.	974.
901.	834.	788.	771.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.

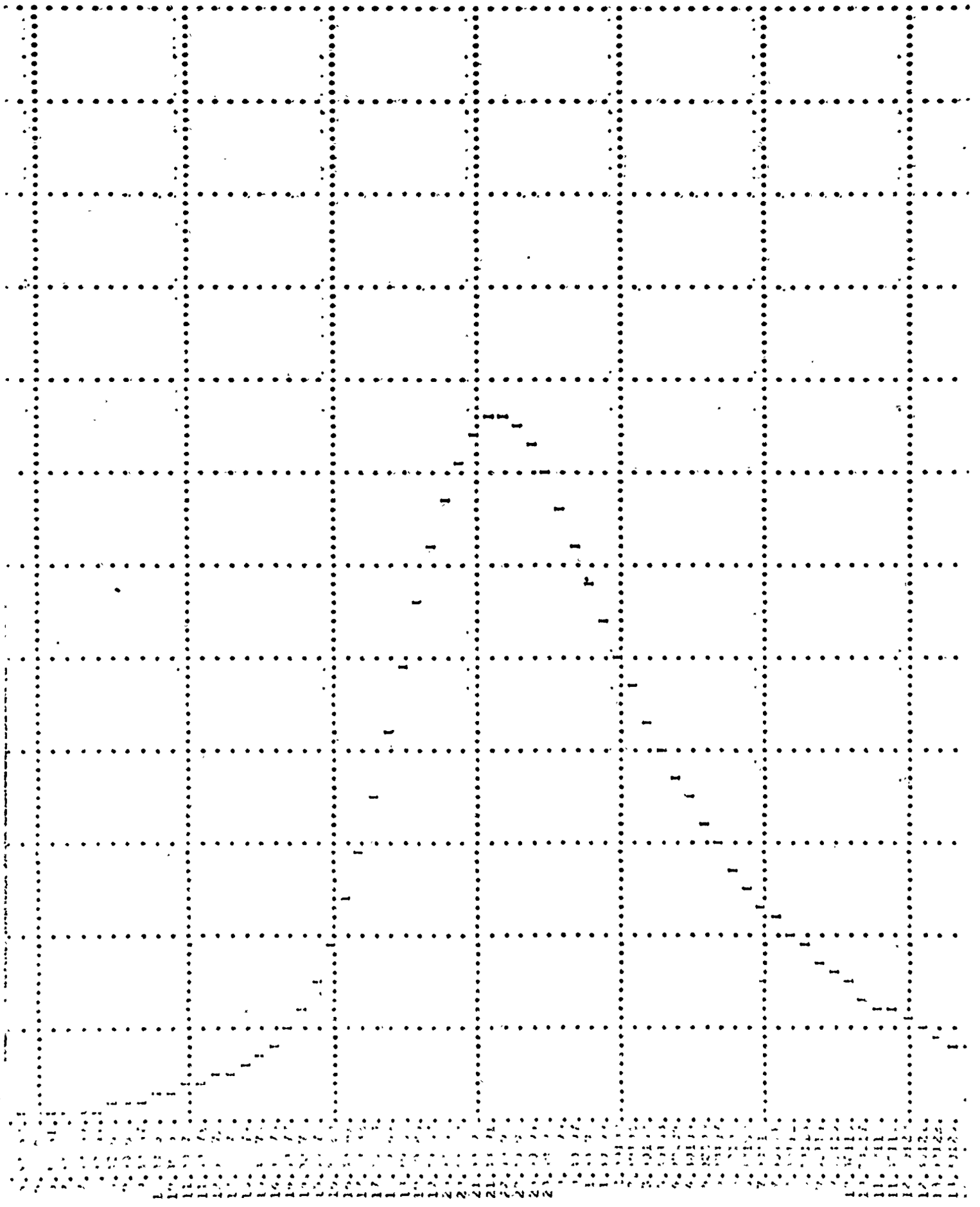
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	15249.	13937.	7323.	2940.	
CMS	432.	392.	207.	83.	427184.
INCHES		4.24	4.98	10.82	12096.
MM		107.76	226.11	274.76	10.91
AC-FT		6851.	14524.	17495.	277.23
THOUS CU M		8464.	17915.	21580.	17652.
					21774.

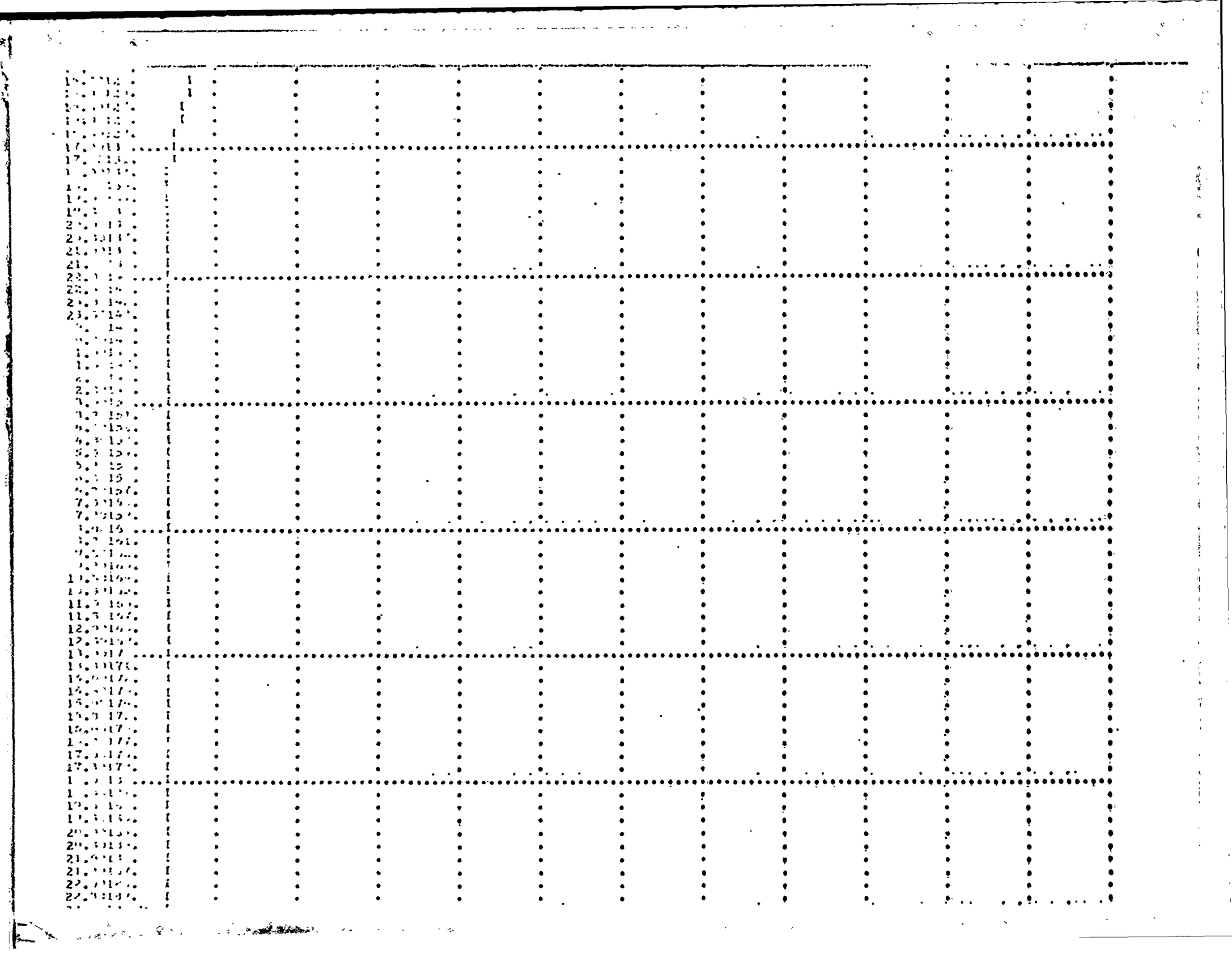
RVF

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)



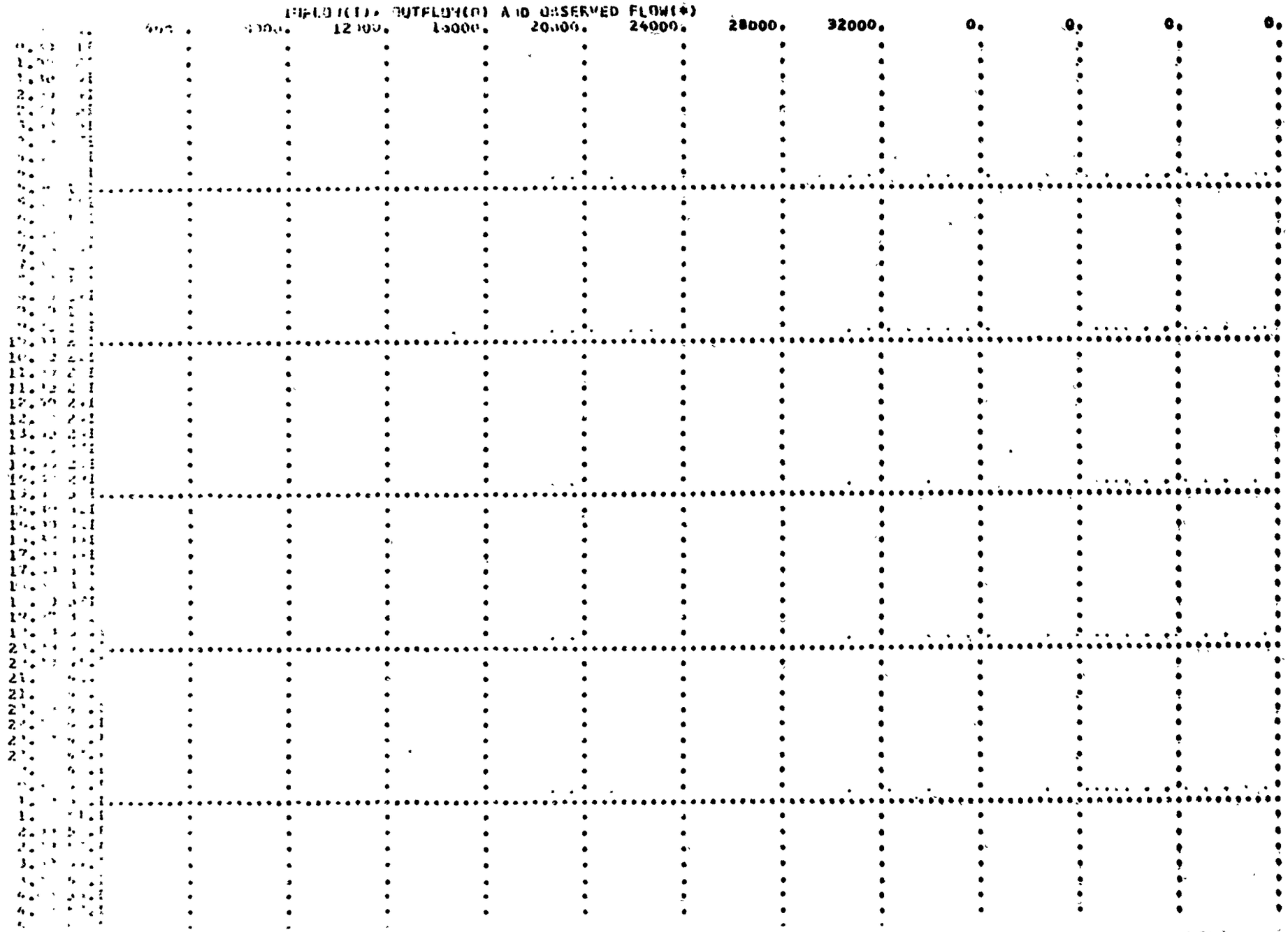


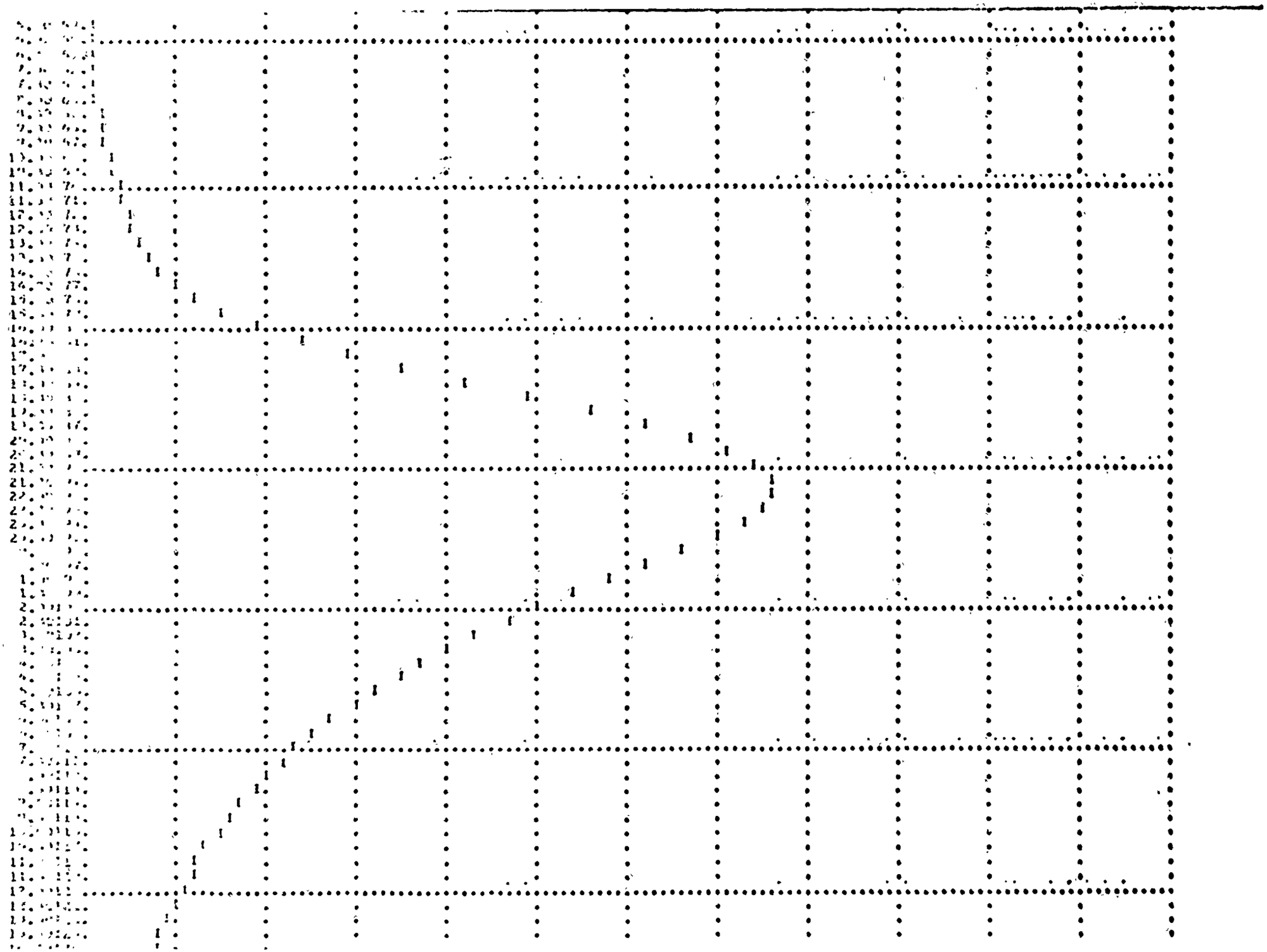


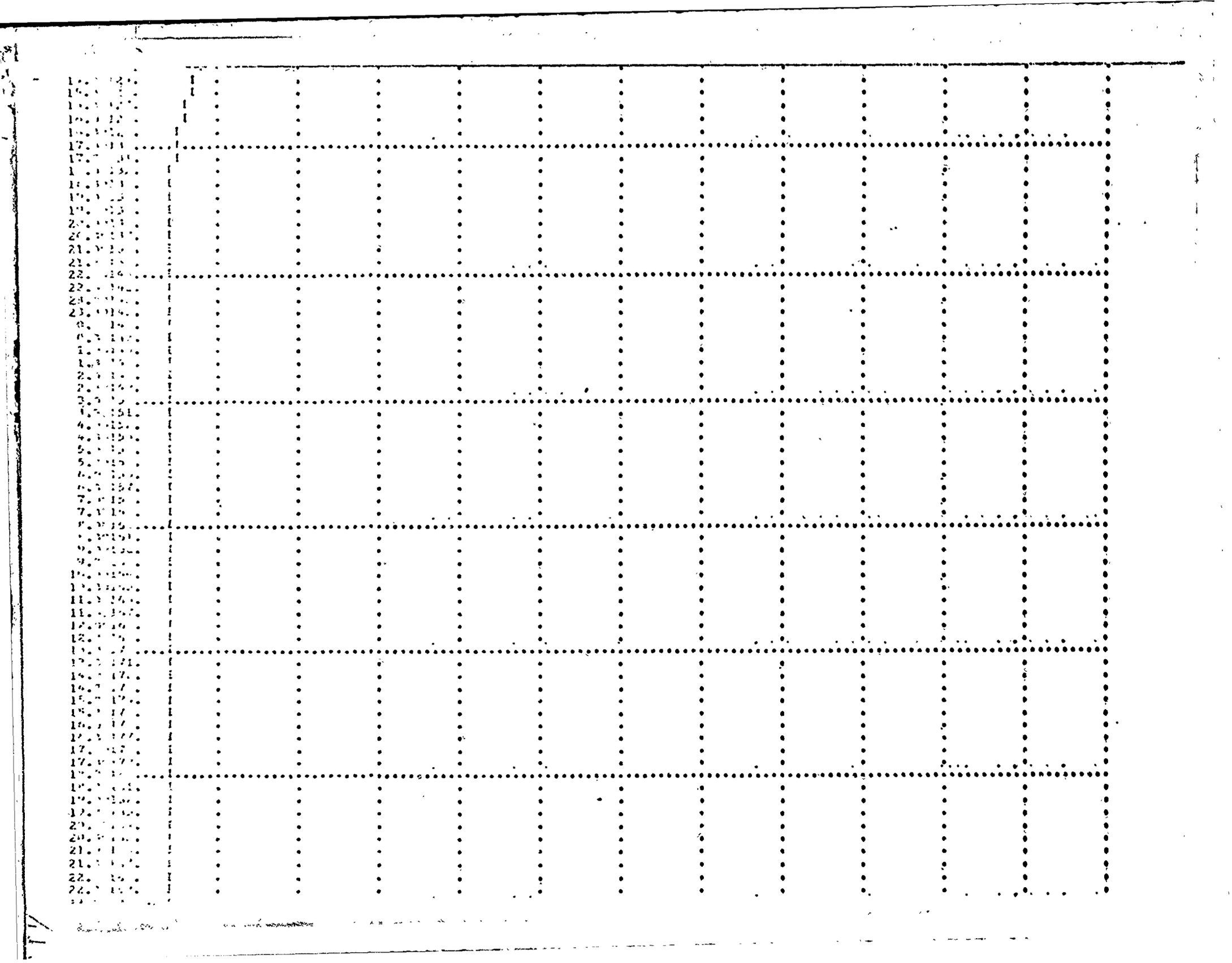
```
                          SUM OF 2 HYDROGRAPHS AT      1  PLAN 1  RTIO 2
     61.        61.        61.        61.        61.        61.        61.        61.        61.        61.
     61.        61.        61.        61.        61.        61.        61.        61.        61.        61.
     61.        61.        61.        61.        61.        61.        61.        61.        61.        61.
     61.        61.        71.        9[illegible].       101.       123.       149.       178.       208.       237.
     2[illegible].      257.       [illegible]       122.       131.       333.       327.       316.       301.       287.
     27[illegible].      26[illegible].      [illegible]       261.       265.       274.       286.       302.       320.       340.
     35[illegible].      405.       45[illegible].      532.       [illegible]       737.       472.      1030.      1209.      1404.
   1[illegible]1[illegible].     1433.      2[illegible]77.     2376.      2117.      3361.      4055.      4931.      6020.      7480.
   [illegible]      11571.     1[illegible]      13156.     13579.     22245.     24723.     26852.     28516.     29684.
   [illegible]      [illegible]      [illegible]151.     23306.     24004.     26461.     24833.     23185.     21572.     20045.
   13[illegible]2[illegible].    17277.     15[illegible].    14[illegible]04.     13322.     12310.     11865.     10980.     10155.      9386.
   [illegible]67[illegible].     8011.      740[illegible].     5436.      6316.      5836.      5392.      4983.      4605.      4256.
   3[illegible].     3537.      4242.      3139.      2474.      2658.      2459.      2274.      2104.      1947.
   1[illegible]7[illegible].     1651.      15[illegible]9.     1541.      1523.      1525.      1525.      1525.      1525.      1525.
   1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.
   152[illegible].     1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.
   152[illegible].     1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.
   152[illegible].     1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.
   152[illegible].     1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.
   152[illegible].     1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.      1525.

                     PEAK     6-HOUR    24-HOUR    72-HOUR   TOTAL VOLUME
            CFS     30499.    27575.    14645.      5880.       854367.
            CMS       864.      781.      415.       167.        24193.
         INCHES                 8.49     17.96      21.63         21.83
             MM               215.52    456.21     549.53        554.46
          AC-FT                13723.    29048.     34990.        35304.
     THOUS CU M                16927.    35831.     43160.        43547.
```

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)







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HYDROGRAPH ROUTING

RATE, DIKSTRA LAKE JEFFERSON

ICTY	ICOMP	IECON	ITAPE	JPLT	JPRT	IHNAME	ISTAGE	IAUTO
1	1	0	0	2	0	1	0	0

ROUTING DATA

RLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPHP	LSTR
0.	0.	0.	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.	0.	0.	-1081.	-1

STAGE	1081.00	1083.00	1085.00	1087.00	1089.00	1091.00	1093.00	1095.00
FLOW	0.	1620.00	4560.00	8420.00	12960.00	18115.00	23810.00	30000.00
CAPACITY=	0.	3.	14.	59.	142.	302.	597.	
ELEVATION=	1053.	1060.	1065.	1070.	1075.	1080.	1085.	

CREL	SPWID	COOP	EXPW	ELEVL	COQL	CAREA	EXPL
1081.0	0.	0.	0.	0.	0.	0.	0.

DAM DATA

TOPEL	COOD	EXPD	DAMWID
1090.0	3.0	1.5	153.

WARNING *** TOP OF DAM, BOTTOM OF SPILLWAY OR LOW-LEVEL OUTLET IS NOT WITHIN RANGE OF GIVEN ELEVATIONS IN STORAGE-ELEVATION DATA
BOTTOM OF RESERVOIR ASSUMED TO BE AT 1065.00
STORAGE-ELEVATION DATA WILL BE EXTRAPOLATED ABOVE ELEVATION 1085.00

STATION 1, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

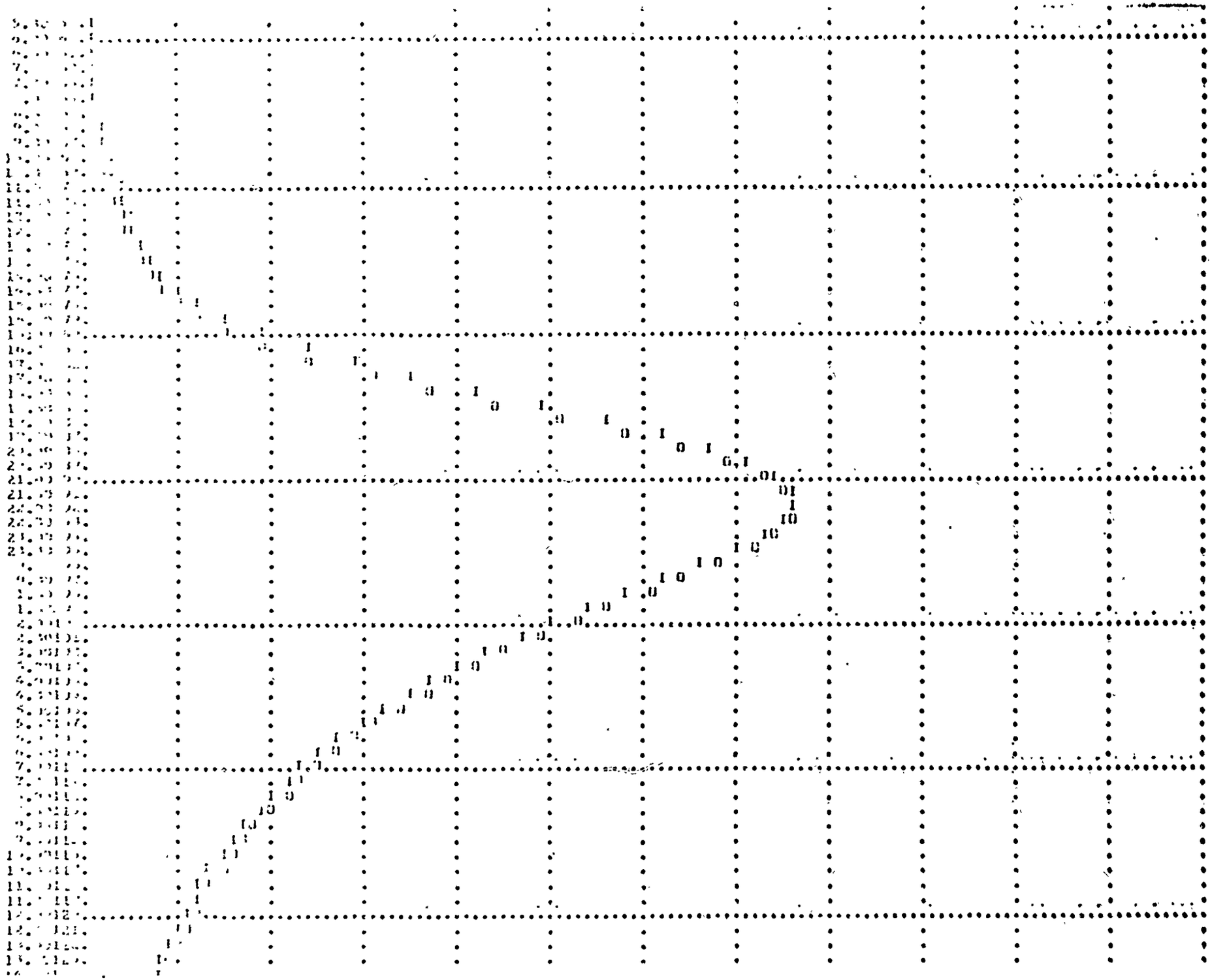
19.	21.	25.	27.	29.	29.	30.	30.	30.	30.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	31.	32.	35.	40.	47.	56.	68.	80.	94.
110.	121.	130.	144.	153.	158.	161.	161.	158.	153.
145.	142.	141.	135.	133.	134.	137.	141.	147.	155.
165.	177.	191.	218.	249.	289.	339.	400.	470.	551.
645.	756.	893.	965.	1114.	1304.	1547.	1985.	2499.	3097.
3[illegible]	[illegible]	6154.	7443.	8818.	10269.	11574.	12743.	13770.	14510.
15[illegible]	15177.	15192.	14880.	14357.	13655.	12872.	12104.	11294.	10506.
77[illegible]	9[illegible]	8422.	7174.	7317.	6787.	6290.	5925.	5390.	4984.
4[illegible]	4[illegible]	3[illegible]	3698.	3418.	3159.	2919.	2697.	2492.	2303.
2127.	1[illegible]	1317.	1662.	1574.	1492.	1398.	1303.	1211.	1123.
1041.	[illegible]	[illegible]	147.	812.	790.	776.	771.	767.	765.
764.	[illegible]	763.	763.	763.	763.	763.	762.	762.	762.
762.	[illegible]	762.	762.	762.	762.	762.	762.	762.	762.
762.	[illegible]	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.
762.	762.	762.	762.	762.	762.	762.	762.	762.	762.

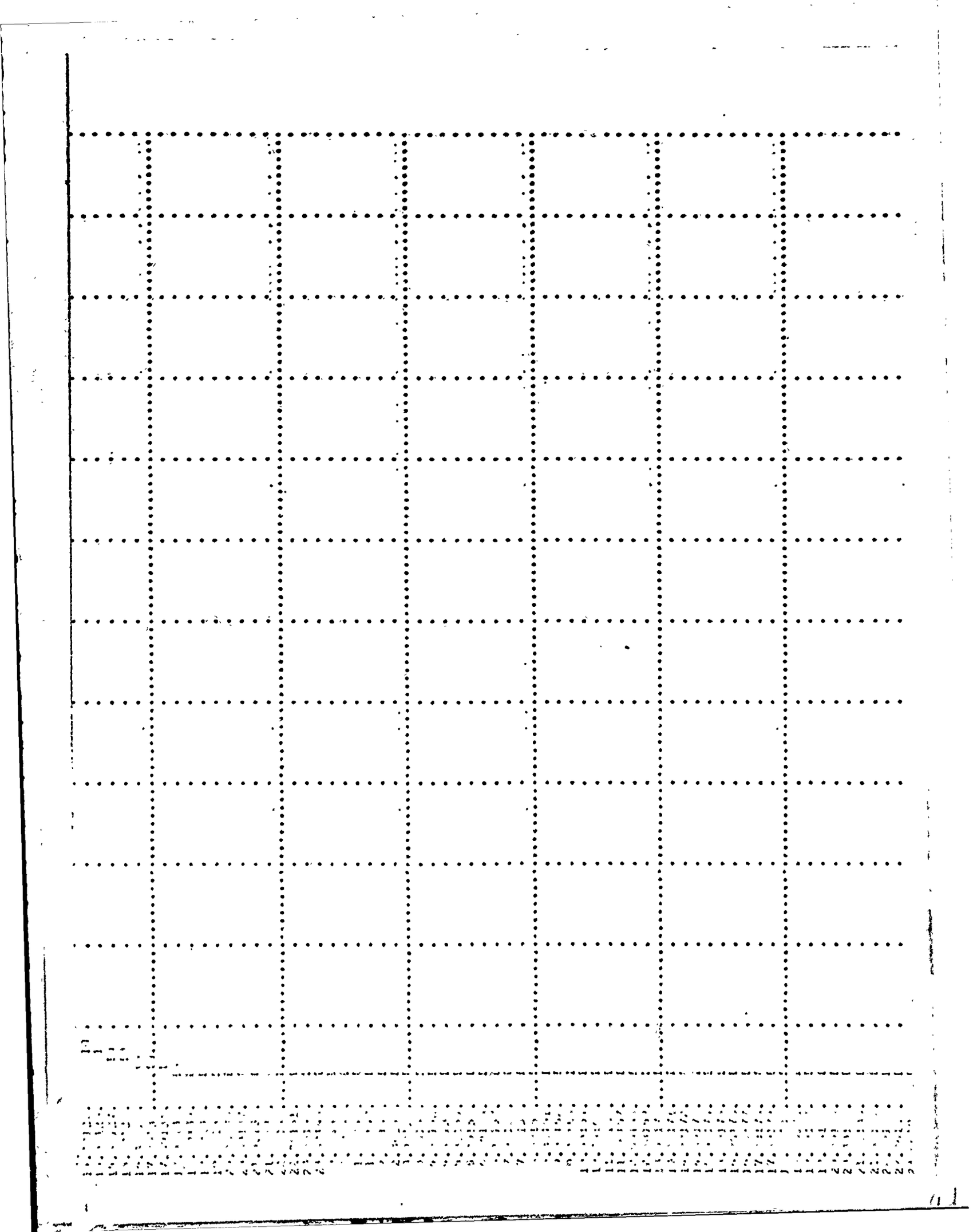
```
                                                            STORAGE
    363.      363.      363.      363.      363.      363.      363.      363.      363.      363.
    363.      363.      363.      363.      363.      363.      363.      363.      363.      363.
    363.      361.      363.      363.      363.      363.      363.      363.      363.      363.
    363.      363.      363.      364.      364.      364.      365.      366.      367.      368.
    369.      370.      371.      372.      372.      373.      373.      373.      373.      372.
    372.      371.      371.      371.      371.      371.      371.      371.      372.      372.
    372.      374.      375.      377.      379.      382.      386.      390.      395.      401.
    408.      415.      422.      431.      442.      456.      474.      494.      514.      538.
    565.      595.      643.      685.      725.      763.      797.      827.      852.      868.
    877.      884.      883.      877.      865.      849.      831.      811.      790.      769.
    751.      732.      715.      591.      681.      665.      650.      635.      622.      609.
    597.      585.      574.      562.      551.      540.      531.      522.      514.      506.
    499.      493.      487.      481.      476.      470.      463.      456.      449.      443.
    437.      431.      427.      423.      420.      419.      418.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.
    417.      417.      417.      417.      417.      417.      417.      417.      417.      417.

                                                              STAGE
  1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0
  1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0
  1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0    1081.0
  1081.0    1081.0    1081.0    1081.0    1081.0    1081.1    1081.1    1081.1    1081.1    1081.1
  1081.1    1081.1    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2
  1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2    1081.2
  1081.2    1081.2    1081.2    1081.3    1081.3    1081.4    1081.4    1081.5    1081.6    1081.7
  1081.8    1081.9    1082.0    1082.2    1082.4    1082.6    1082.9    1083.2    1083.6    1084.0
  1084.5    1085.1    1085.6    1085.5    1087.2    1087.8    1088.4    1088.9    1089.3    1089.6
  1089.7    1089.8    1089.8    1089.7    1089.5    1089.3    1089.0    1088.6    1088.3    1087.9
  1087.5    1087.3    1087.0    1086.7    1086.4    1086.1    1085.9    1085.6    1085.4    1085.2
  1085.0    1084.8    1084.6    1084.4    1084.2    1084.0    1083.9    1083.7    1083.6    1083.5
  1083.3    1083.2    1083.1    1083.0    1082.9    1082.8    1082.7    1082.6    1082.5    1082.4
  1082.3    1082.2    1082.1    1082.0    1082.0    1082.0    1082.0    1082.0    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9
  1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9    1081.9

PEAK OUTFLOW IS     15199. AT TIME  46.00 HOURS

                           PEAK     6-HOUR    24-HOUR    72-HOUR   TOTAL VOLUME
               CFS        15199.    13806.      7314.      2932.        425863.
               CMS          430.      391.       207.        83.         12059.
            INCHES                    4.23       8.97      10.79          10.88
                MM                  107.52     227.84     274.04         276.37
             AC-FT                    6846.     14507.     17449.         17598.
        THOUS CU M                    8444.     17894.     21523.         21706.
```

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)

2000. 4000. 6000. 8000. 10000. 12000. 14000. 16000. 0. 0. 0. 0.





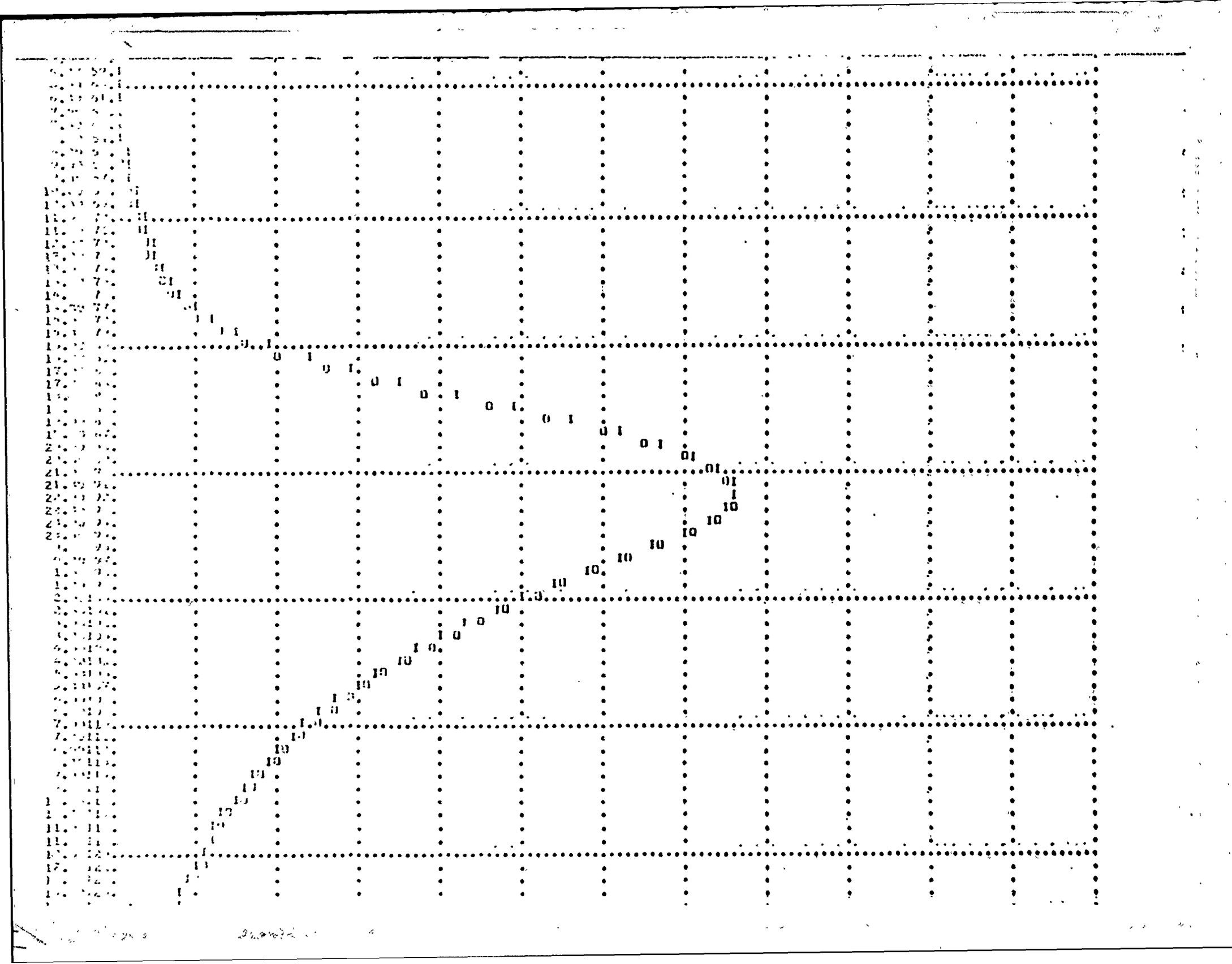
```
[illegible] LOW-LEVEL OUTLET IS NOT WITHIN RANGE OF GIVEN ELEVATIONS IN STORAGE-ELEVATION DATA
          [illegible] RESERVOIR ASSUMED TO BE AT 1055.00
          [illegible] DATA WILL BE EXTRAPOLATED ABOVE ELEVATION 1085.00

                                    STATION      1, PLAN 1, RATIO 2

                                  END-OF-PERIOD HYDROGRAPH ORDINATES

                                              OUTFLOW
  [illegible]  [illegible]  [illegible]      55.      57.      59.      60.      60.      60.      61.
       61.        61.        61.      61.      61.      61.      61.      61.      61.      61.
  [illegible]      61.        61.      61.      61.      61.      61.      61.      61.      61.
  [illegible]  [illegible]  [illegible]      69.      79.      94.     112.     135.     160.     188.
  [illegible]     243.       257.     236.     305.     317.     323.     322.     316.     306.
  [illegible]  [illegible]  [illegible]     268.     267.     264.     273.     282.     295.     310.
  [illegible]  [illegible]  [illegible]     436.     498.     579.     679.     799.     941.    1102.
  [illegible]  [illegible]  [illegible]    2074.    2439.    2882.    3446.    4161.    5143.    6435.
  [illegible]  [illegible]  [illegible]   15342.   18277.   21217.   23816.   26111.   28004.   29333.
  [illegible]  [illegible]  [illegible]   29697.   28454.   26951.   25399.   23784.   22168.   20622.
  [illegible]  [illegible]  [illegible]   15483.   14423.   13373.   12428.   11537.   10679.    9874.
  [illegible]  [illegible]  [illegible]    7261.    6710.    5200.    5729.    5294.    4892.    4530.
  [illegible]  [illegible]  [illegible]    3352.    3107.    2875.    2659.    2459.    2275.    2105.
  [illegible]  [illegible]  [illegible]    1609.    1575.    1554.    1541.    1534.    1530.    1528.
  [illegible]  [illegible]  [illegible]    1525.    1525.    1525.    1525.    1525.    1525.    1525.
  [illegible]  [illegible]  [illegible]    1525.    1525.    1525.    1525.    1525.    1525.    1525.
  [illegible]  [illegible]  [illegible]    1525.    1525.    1525.    1525.    1525.    1525.    1525.
  [illegible]  [illegible]  [illegible]    1525.    1525.    1525.    1525.    1525.    1525.    1525.
  [illegible]      1525.      1525.    1525.    1525.    1525.    1525.    1525.    1525.    1525.
  [illegible]  [illegible]  [illegible]    1525.    1525.    1525.    1525.    1525.    1525.    1525.

                                              STORAGE
  [illegible]  [illegible]  [illegible]     365.     155.     345.     365.     365.     365.     365.
  [illegible]  [illegible]  [illegible]     365.     365.     365.     365.     365.     365.     365.
  [illegible]  [illegible]  [illegible]     365.     365.     365.     365.     365.     365.     365.
  [illegible]  [illegible]  [illegible]     356.     367.     368.     369.     371.     373.     375.
      377.       379.   [illegible]     382.     381.     384.     385.     384.     384.     383.
  [illegible]     382.   [illegible]     391.     380.     381.     381.     382.     382.     384.
  [illegible]     387.   [illegible]     393.     397.     403.     410.     419.     430.     441.
  [illegible]  [illegible]  [illegible]     497.     512.     529.     552.     580.     614.     654.
  [illegible]     762.   [illegible]     881.     946.     994.    1034.    1068.    1094.    1111.
  [illegible]    1127.   [illegible]    1119.    1100.    1060.    1057.    1033.    1009.     984.
  [illegible]  [illegible]  [illegible]     891.     860.     842.     819.     796.     774.     753.
  [illegible]     715.   [illegible]     679.     662.     647.     632.     619.     607.     595.
  [illegible]     571.   [illegible]  [illegible]     538.     529.     520.     512.     505.     498.
  [illegible]  [illegible]  [illegible]     478.     476.     474.     473.     473.     472.     472.
  [illegible]     472.        472.     472.     472.     472.     472.     472.     472.     472.
  [illegible]  [illegible]  [illegible]     472.     472.     472.     472.     472.     472.     472.
  [illegible]  [illegible]  [illegible]     472.     472.     472.     472.     472.     472.     472.
  [illegible]  [illegible]     472.     472.     472.     472.     472.     472.     472.     472.
  [illegible]  [illegible]  [illegible]     472.     472.     472.     472.     472.     472.     472.
  [illegible]  [illegible]  [illegible]     472.     472.     472.     472.     472.     472.     472.

                                              STAGE
  [illegible]     1081.1  [illegible]   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1
  [illegible]     1081.1  [illegible]   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1
  [illegible]  [illegible]  [illegible]   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1   1081.1
  [illegible]  [illegible]  [illegible]   1081.1   1081.1   1081.1   1081.1   1081.2   1081.2   1081.2
  [illegible]  [illegible]  [illegible]   1081.4   1081.4   1081.4   1081.4   1081.4   1081.4   1081.4
  [illegible]  [illegible]  [illegible]   1081.3   1081.3   1081.3   1081.3   1081.3   1081.4   1081.4
  [illegible]  [illegible]  [illegible]   1081.5   1081.6   1081.7   1081.8   1082.0   1082.2   1082.4
  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]
```

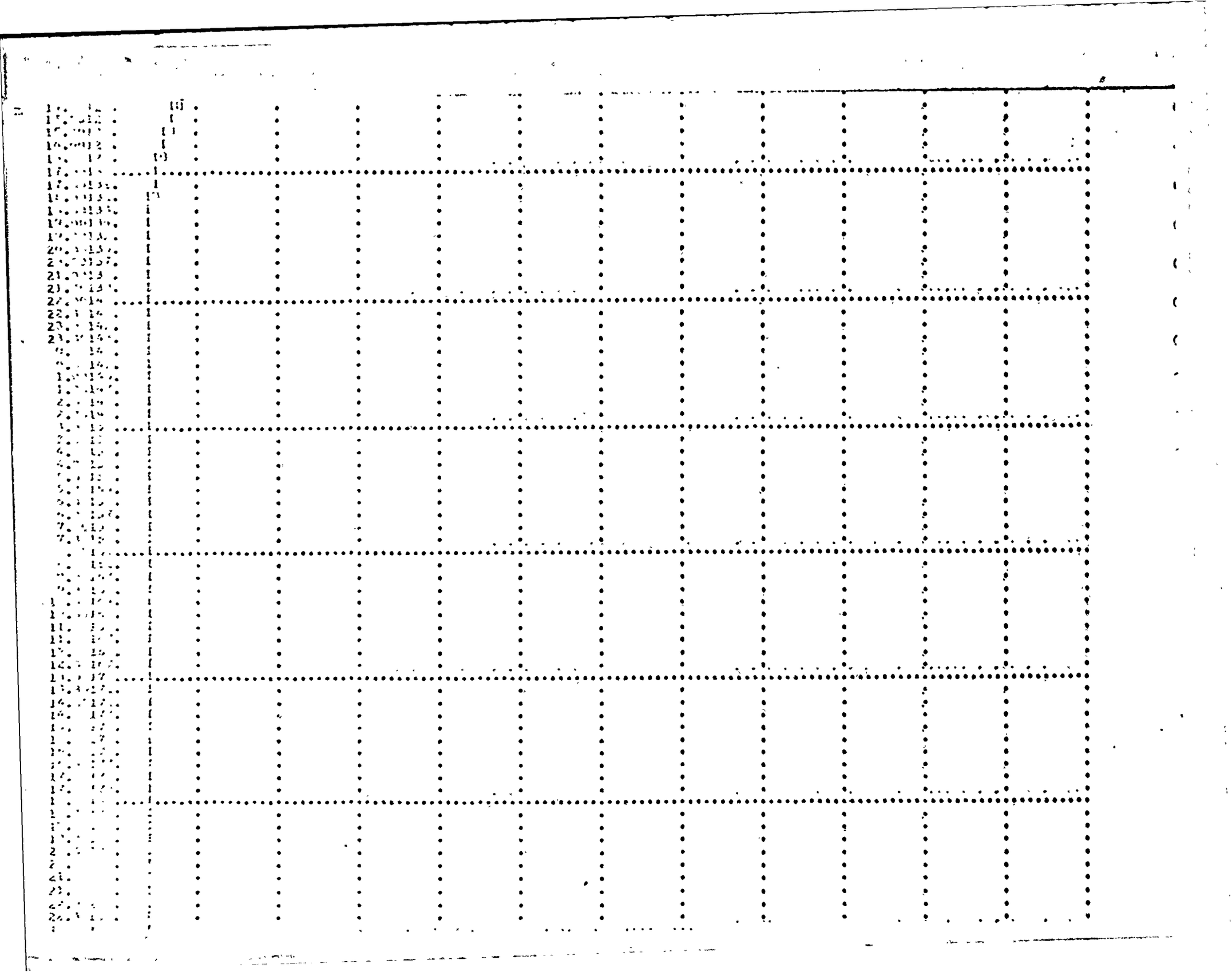
```
[illegible]  1087.0  1088.8  1089.9  1090.9  1091.7  1092.4  1093.0  1093.4  1093.7
[illegible]  1095.0  1093.9  1093.8  1093.5  1093.2  1092.8  1092.4  1092.0  1091.6
[illegible]  1091.9  1090.4  1090.0  1089.6  1089.2  1088.8  1088.4  1088.0  1087.6
[illegible]  1087.0  1086.7  1086.4  1086.1  1085.8  1085.6  1085.4  1085.2  1085.0
[illegible]  [illegible]  1084.4  1084.2  1084.0  1083.8  1083.7  1083.6  1083.4  1083.3
[illegible]  [illegible]  1083.0  1083.0  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9
[illegible]  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9  1082.9

PEAK OUTFLOW IS [illegible] AT TIME 46.00 HOURS

                 PEAK    6-HOUR   24-HOUR   72-HOUR   TOTAL VOLUME
        CFS     30479.   27623.   14637.     5865.       851731.
        CMS       863.     782.     414.      166.        24118.
     INCHES               8.47    17.95     21.58         21.76
         MM             215.20   455.96    548.09        552.75
      AC-FT             13702.   29032.    34899.        35195.
 THOUS CU M             16902.   35811.    43047.        43413.
```

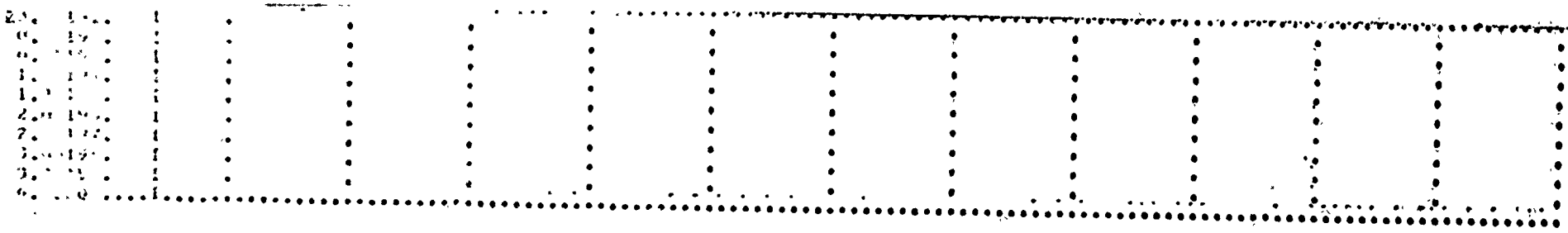
STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)

0. 4000. 8000. 12000. 16000. 20000. 24000. 28000. 32000. 0. 0. 0. 0.







[illegible] (END OF PERIOD) SUMMARY OF MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOW IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIO 1 0.50	RATIO 2 1.00
[illegible]	1	14.16	1	9237.	18475.
	(	0.00)	(	261.54)(	523.15)(
HYDROGRAPH AT	1	12.16	1	6012.	12024.
	(	0.00)	(	170.24)(	340.48)(
[illegible]	1	26.30	1	15249.	30499.
	(	0.00)	(	431.81)(	863.63)(
[illegible]	1	30.34	1	15199.	30474.
	(	0.00)	(	430.39)(	863.04)(

RATIOS APPLIED TO FLOWS

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1081.00	1081.00	1090.00
STORAGE	361.	361.	892.
OUTFLOW	0.	0.	15538.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.50	1082.67	0.	684.	15199.	0.	46.00	0.
1.00	1093.93	3.98	1127.	30479.	9.50	46.00	0.

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961.

2) Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972 (U.S. Department of Agriculture).

3) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

4) T.W. Lambe and R.V. Whitman, Soil Mechanics, John Wiley and Sons, 1965.

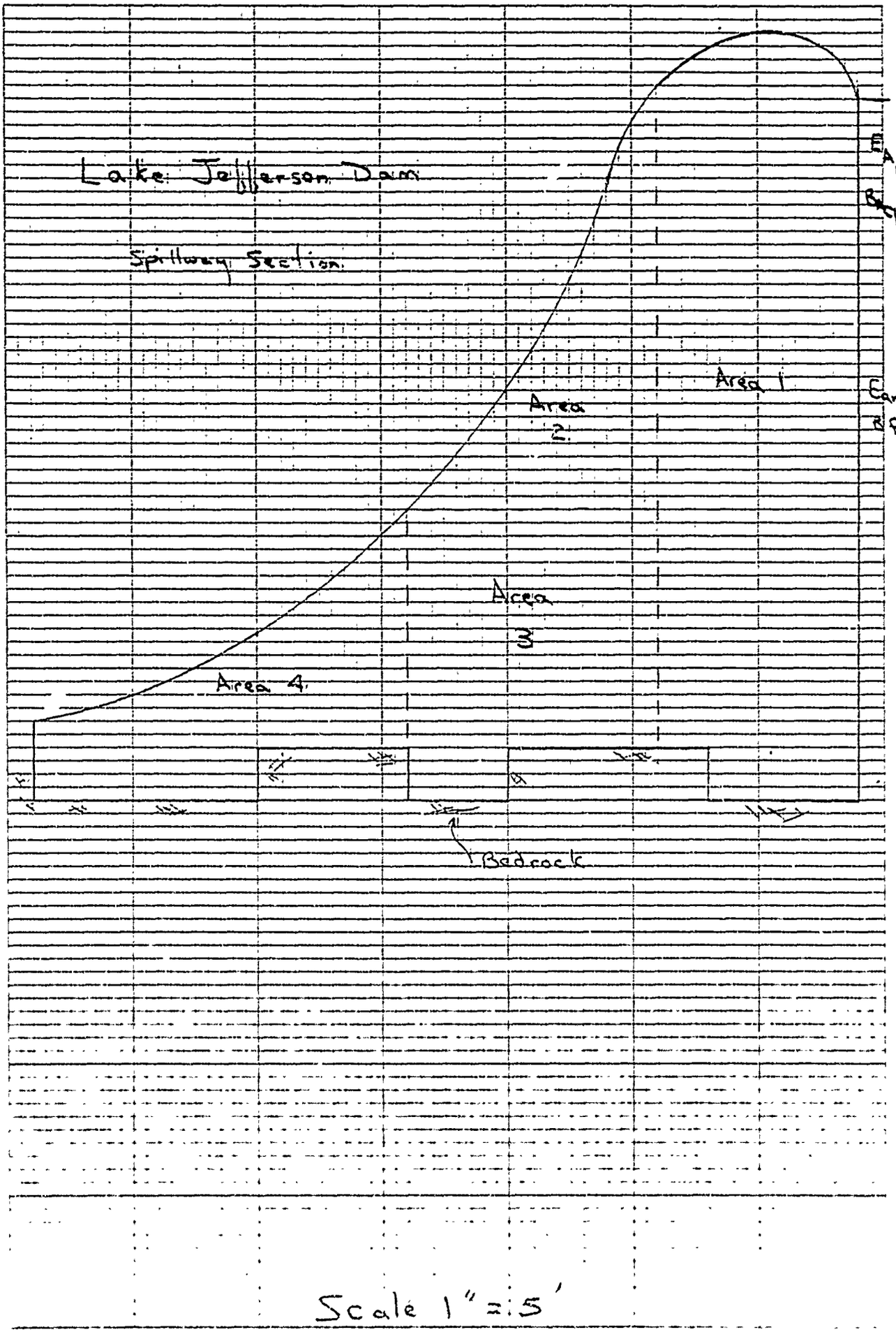
5) W.D. Thornbury, Principles of Geomorphology, John Wiley and Sons, 1969.

6) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

7) Cornell University Agriculture Experiment Station (compiled by M.G. Cline and R.L. Marshall), General Soil Map of New York State and Soils of New York Landscapes, Information Bulletin 119, 1977.

APPENDIX E

STABILITY ANALYSIS



		Area	Moment Arm
Area 1	28' high x 8' wide =	224 ft²	29 ft
Area 2	½ x 16' high x 10 wide =	80	21.7
Area 3	10' high x 10 wide =	100	20
Area 4	½ 11' high x 15' wide =	82.5	10

19 feet of concrete to shear

Assuming f'_c = 500 psi

Shear Strength = .15 f'_c = 75 psi

19 ft² x 144 in²/ft² x 75 psi =

Shear Strength = 205,200 #/Lb

Modify output of program

to account for shear strength

of shear key.

RCL 45 = sum of Resisting forces

+ 205 kips = shear strength

÷ quantity by

RCL 56 = sum of Sliding forces

= Factor of Safety for Sliding

INPUT FOR STABILITY ANALYSIS PROGRAM

Input Location	Input Parameter Description
0	Unit Weight of Dam (K/ft.^{3})
1	Area of Segment #1 (ft.^{2})
2	Location of Center of Gravity from toe (ft.) Segment #1
3	Area of Segment #2 (ft.^{2})
4	Location of CG from toe, Seg. #2 (ft.)
5	Area of Segment #3 (ft.^{2})
6	Location of CG from toe, Sg. #3 (ft.)
7	Total Base Width of Dam (ft.)
8	Height of Dam (ft.)
9	Ice Loading (K/L.F.)
10.	Coefficient of Sliding
11	Unit Weight of Soil (K/ft.^{3})
12	Coefficient of Active Soil Pressure - Ka
13	Coefficient of Passive Soil Pressure - Kp
14	Height of Water over Top of Dam (ft.)
15	Height of Soil for Active Pressure (ft.)
16	Height of Soil for Passive Pressure (ft.)
17	Height of Water in Tailrace Channel (ft.)
18	Unit Weight of Water (K/ft.^{3})
19	Area of Segment #4 (ft.^{2})
20	Location of CG from toe, Seg. #4 (ft.)
46	Height of Ice Load or Active Water
49	Location of Foundation Drains from Heel (ft.)
50	Seismic Coefficient (α)
58	Resistance from Benefit of Shear Key (Kips)

Stability Analysis
Input Parameters

Parameter	Case I	Case II	Case III	Case IV	Case V
00	.115				
01	229				
02	29				
03	80				
04	21.7				
05	100				
06	20				
07	33				
08	27				
09	0	5	0	0	0
10	0.7				
11	0.05				
12	0.4				
13	6				
14	0	0	8	12	0
15	25				
16	5				
17	3	3	6	8	3
18	0.0624				
19	82.5				
20	1.0				
46	27	25	27	27	27
50	0	0	0	0	0.1
	Normal Ends	Ice Load	½ PMF	PMF	Seismic Loading

LAKE JEFFERSON DAM
STABILITY ANALYSIS
SPILLWAY SECTION

Case I Normal Loading

(a) 1.798864234

(b) 18.30176793

~~1.176191592~~

205.	+
205.	RCL
	45
34.1017	
34.1017	=
239.1017	
239.1017	÷
239.1017	RCL
	56
28.9948	
28.9948	=

(c) 8.246364865

Case II Ice Loading

(a) 1.626218113

(b) 15.86957456

~~1.199999974~~

205.	+
205.	RCL
	45
34.1017	
34.1017	=
239.1017	
239.1017	÷
239.1017	RCL
	56
30.75	
30.75	=

(c) -.7756650-1

Case III 1/2 PMF

(a) 1.453269047

(b) 13.96438758

~~.771884694~~

205.	+
205.	RCL
	45
32.78194	
32.78194	=
237.78194	
237.78194	÷
237.78194	RCL
	56
42.4732	
42.4732	=

(c) 5.598399461

Case IV PMF

(a) 1.321719691

(b) 11.57540037

~~.654599151~~

205.	+
205.	RCL
	45
32.2141	
32.2141	=
237.2141	
237.2141	÷
237.2141	RCL
	56
43.2124	
43.2124	=

(c) 4.830209947

Case V Seismic Loading

(a) 1.488029388

(b) 13.51614648

.~~2647226113~~

0.	RCL 45
34.1017	
34.1017	+
205.	=
239.1017	
239.1017	÷
239.1017	RCL 57
38.54464	
38.54464	=

(c) 6.203241229

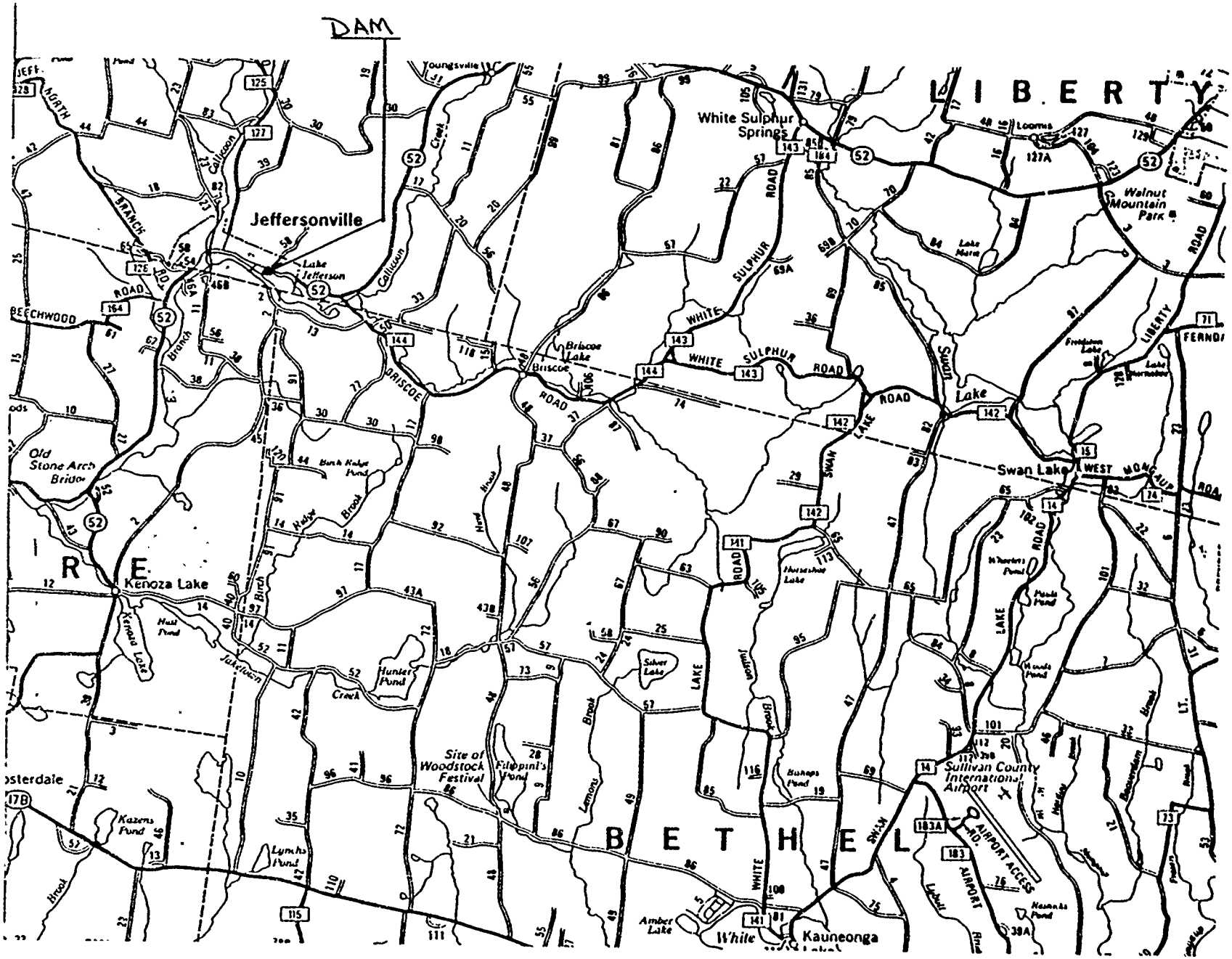
NOTE: (a) is the factor of safety for overturning;

(b) is the location of the resultant from the toe;

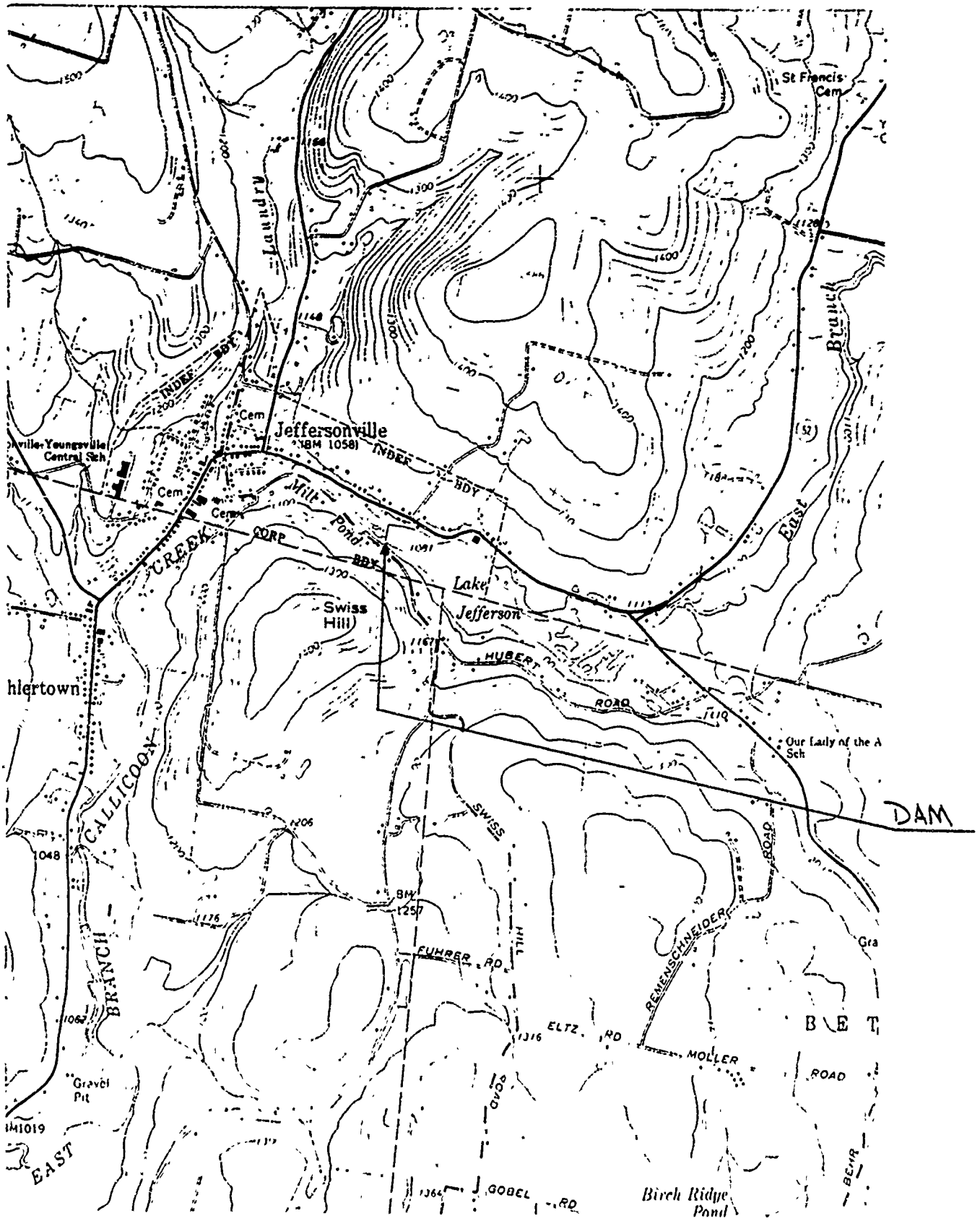
(c) is the factor of safety for sliding with the benefit of resistence from the shear key.

APPENDIX F

DRAWINGS



VICINITY MAP



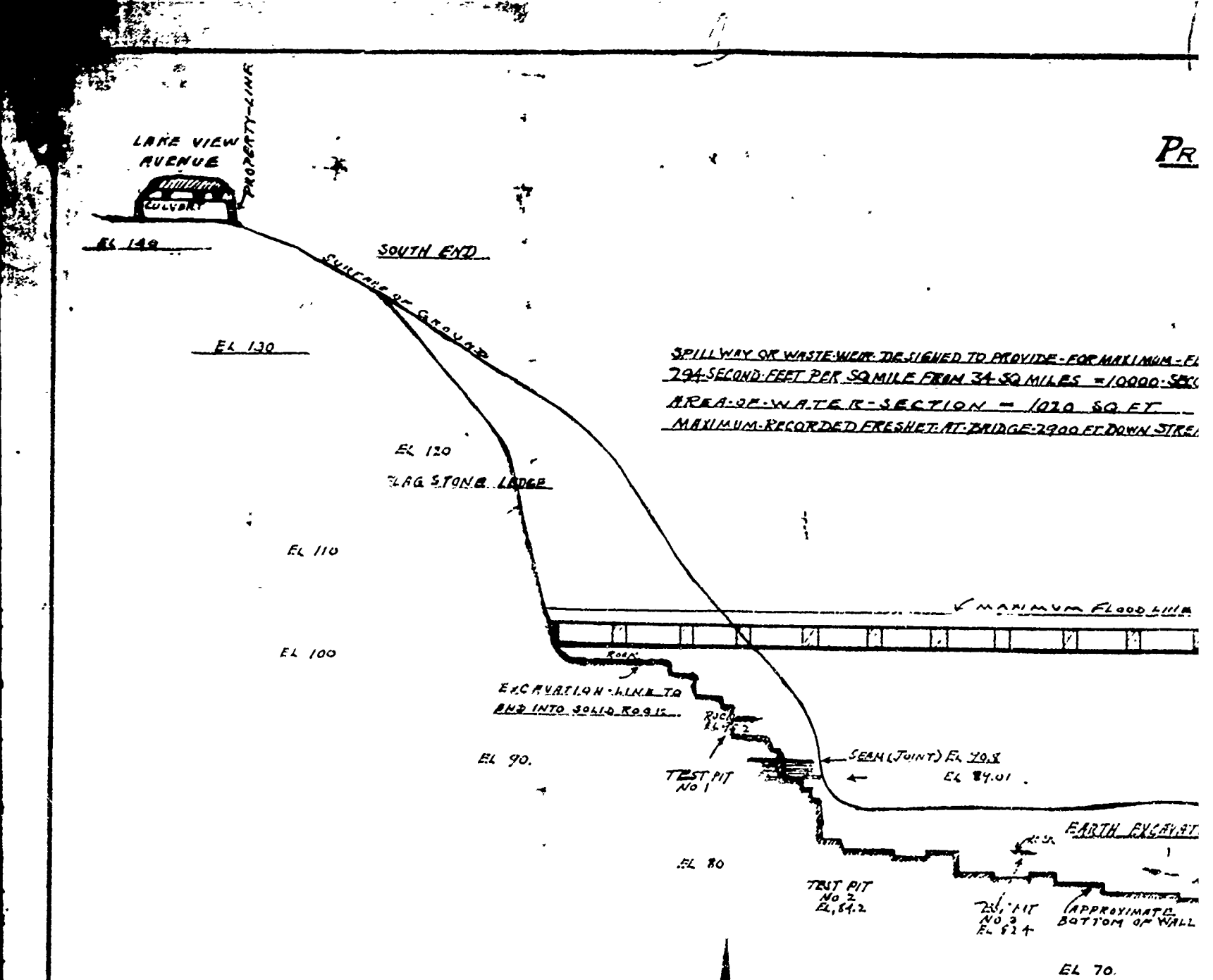
TOPOGRAPHIC MAP

LIST OF DRAWINGS

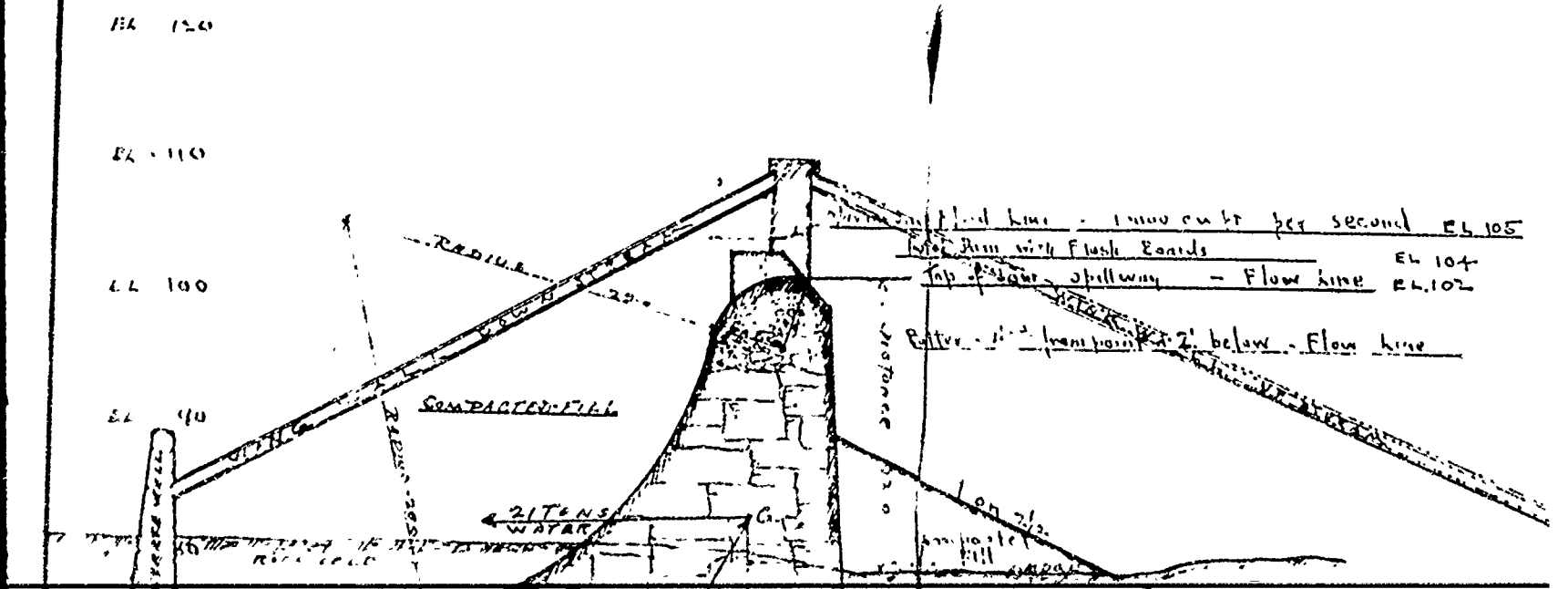
LAKE JEFFERSON DAM

Map of Lake Jefferson	April 12, 1922
Proposed Dam & Hydro-Electric Power Plant	April, 1922
Lake Jefferson - Detailed Drawing	June 14, 1927

PR



SPILLWAY OR WASTE WEIR DESIGNED TO PROVIDE FOR MAXIMUM FL
294 SECOND FEET PER SQ MILE FROM 34 SQ MILES = 10000 SEC
AREA OF WATER SECTION = 1020 SQ FT
MAXIMUM RECORDED FRESHET AT BRIDGE 2900 FT DOWN STRE



PROFILE ALONG CENTER LINE OF DAM.

SCALE 1" = 20'-0"

M-FLOOD RUN-OFF-OF
SECOND-FT.

STREAM-REQUIRED-650 SQ.FT.

TOP COVING OF DAM

EL

MIN EL OF

RED CLAY
WITH ROU

EL 100

OLD RACE WAY

EL 90

30" CAST-IRON-WATER-PIPE-LINE THROUGH CORE WALL

EAST BRANCH OF CALLICOON CREEK

TOTAL-LENGTH-ON TOP-OF-DAM-2

EL 80

ROCK

ROCK

ROCK

TEST PIPE NO 4 EL 70.0

TEST PIPE NO 5 EL 75.0

TEST PIPE NO 6 EL 77.5

Side Elevation

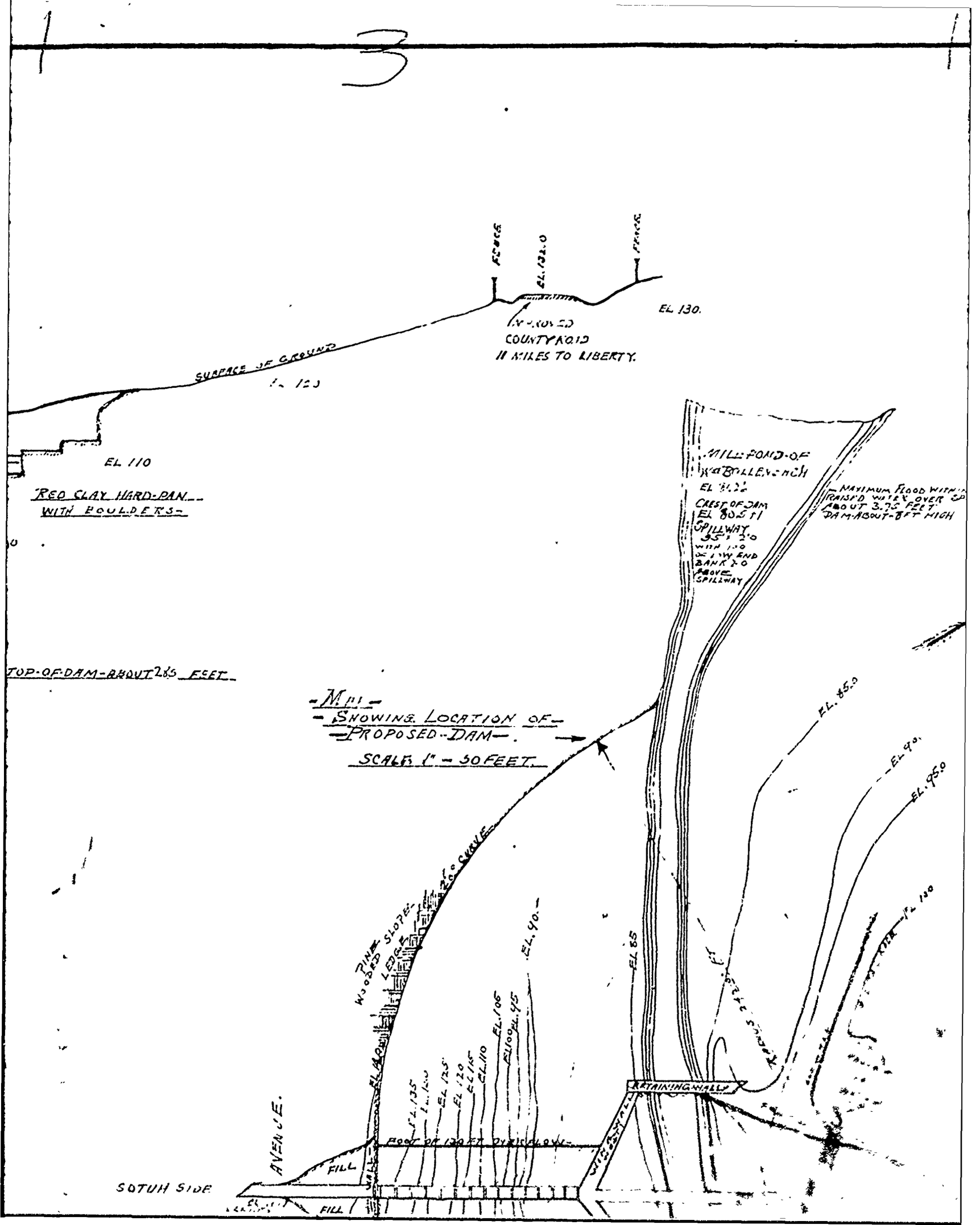
Top of Spillway (Section)

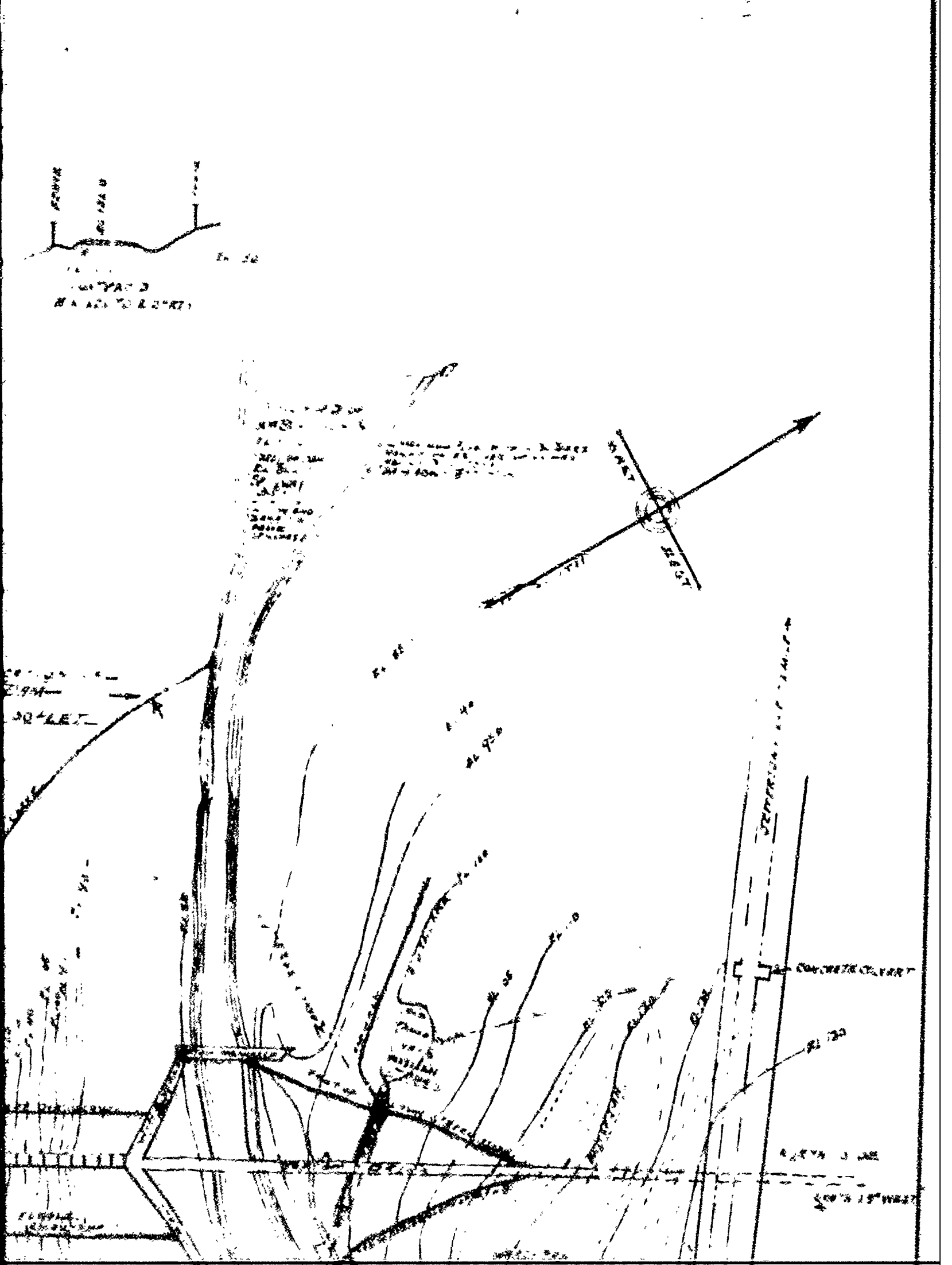
Radius 50

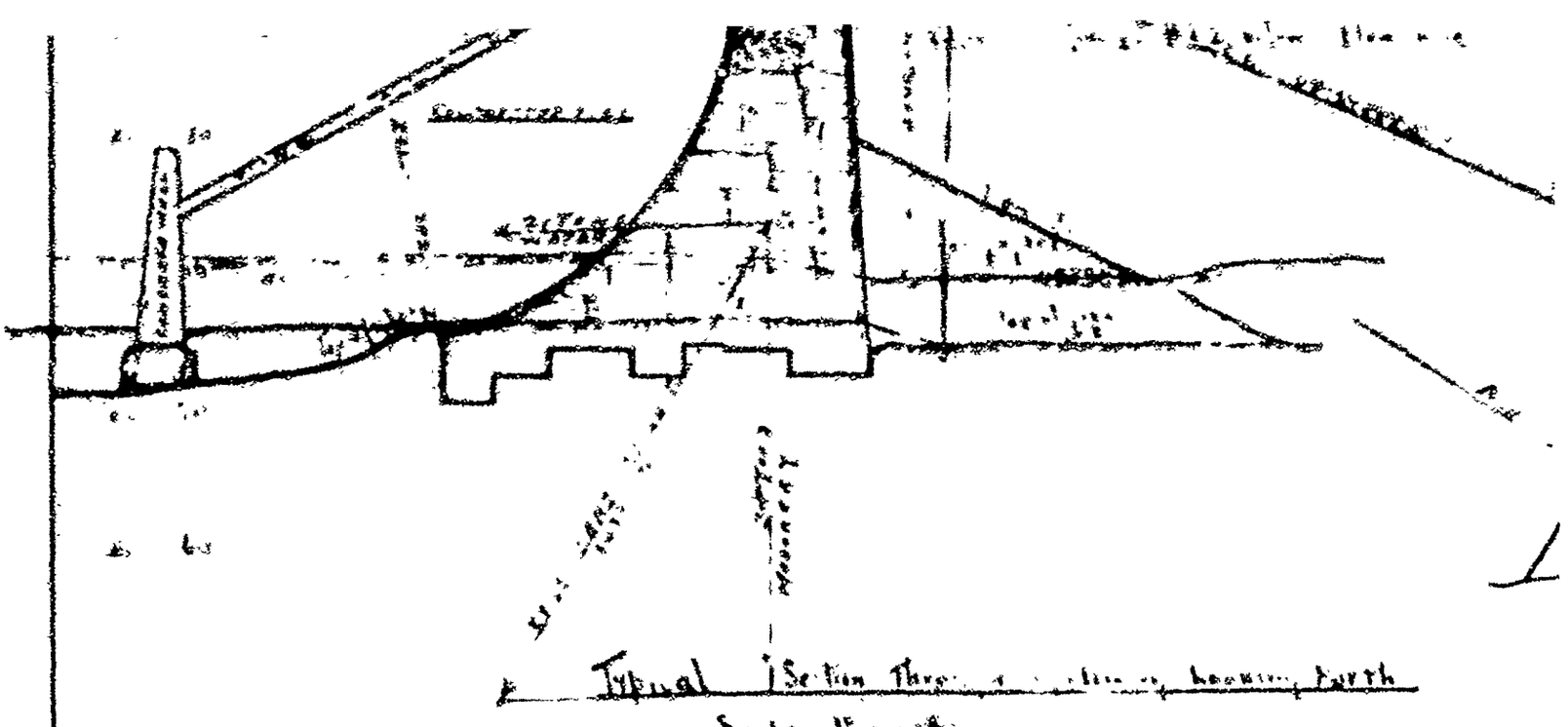
Elect View

Top of Spillway (Beveled Section)

1 3 1

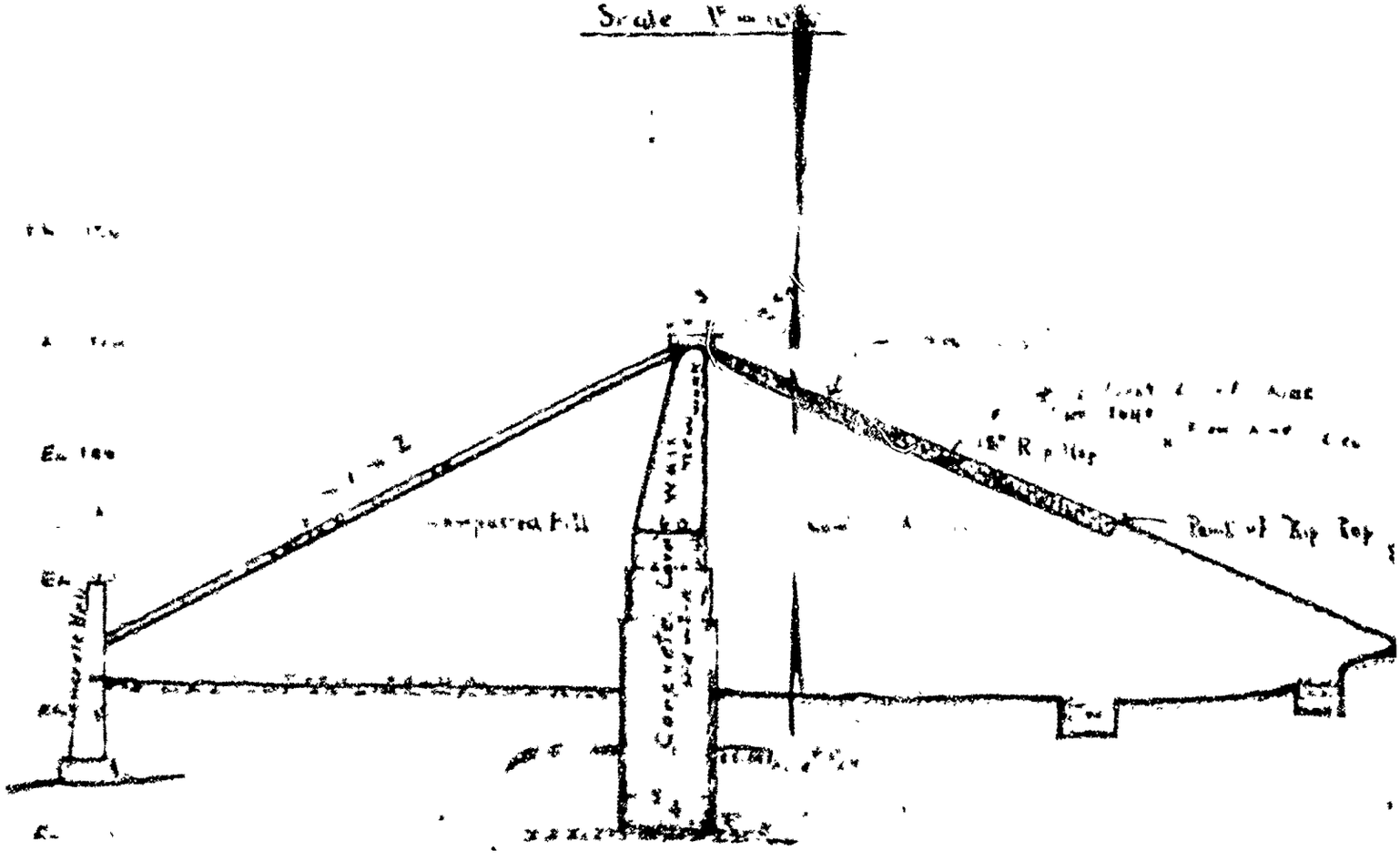

FENCE
EL. 132.0
FENCE
EL. 130.
PROPOSED COUNTY ROAD 11 MILES TO LIBERTY.
SURFACE OF GROUND
EL. 110
RED CLAY HARD-PAN WITH BOULDERS
TOP OF DAM ABOUT 285 FEET
MILL POND OF W. A. BULLENTINE
EL. 81.2
CREST OF DAM EL. 80.5 ft
SPILLWAY 35' x 2.0 WITH 1:0 DOWN END BANK 2.0 ABOVE SPILLWAY
MAXIMUM FLOOD WITH RAISED WATER OVER SP ABOUT 3.75 FEET DAM ABOUT 8FT HIGH
MAP SHOWING LOCATION OF PROPOSED DAM.
SCALE 1" = 30 FEET.
EL. 85.0
EL. 90.
EL. 95.0
EL. 100
EL. 85
EL. 90.
PINE WOODED SLOPE
LEDGE
EL. 135
EL. 125
EL. 120
EL. 115
EL. 110
EL. 105
EL. 100
EL. 95
RETAINING WALL
FLOOR OF 130 FT OVERFLOW
AVENUE E.
SOUTH SIDE
FILL
WALL
FILL





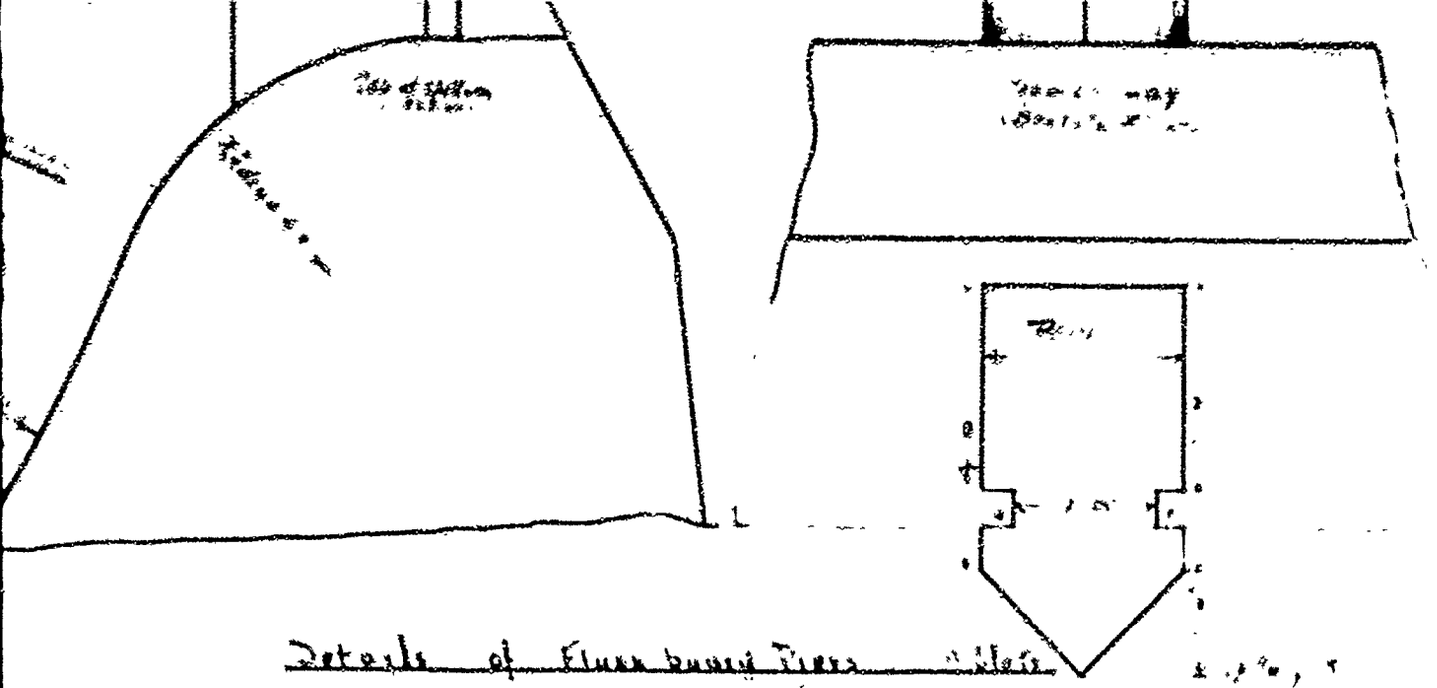
Tunnel Section Through ... bearing Earth

Scale 1" = ...



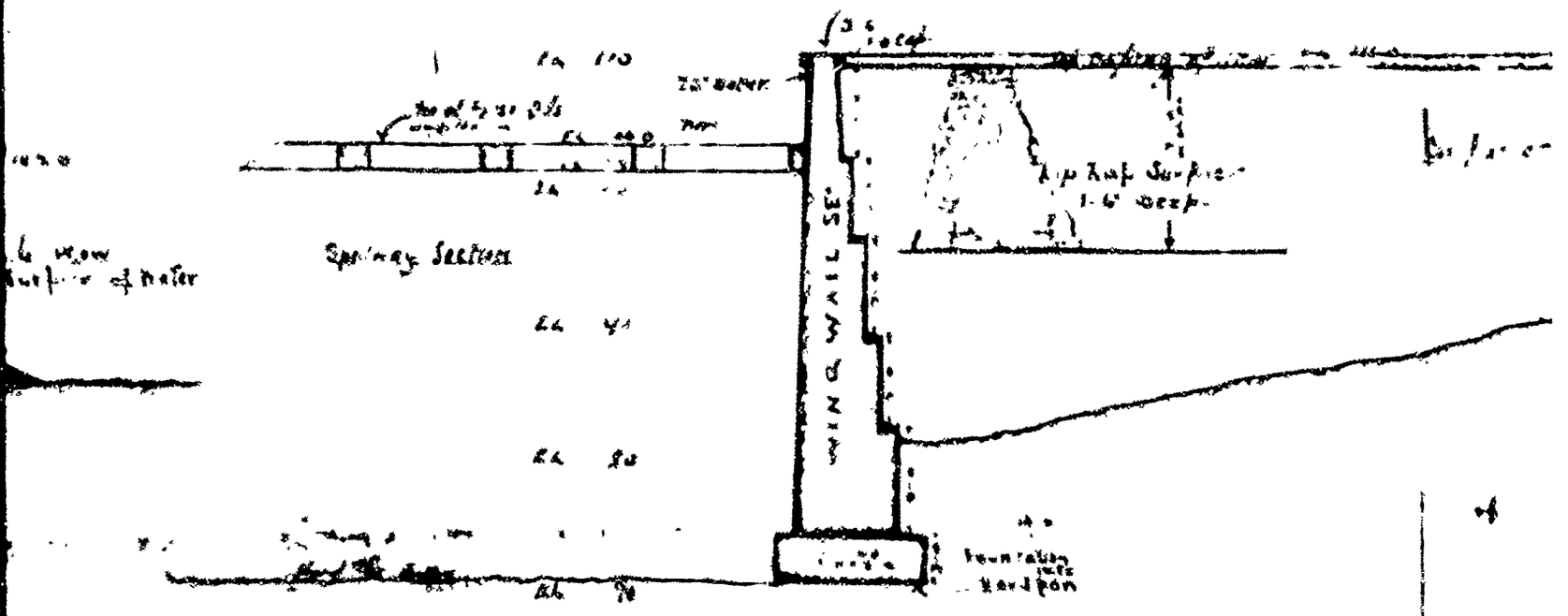
Typical Section 1 North of Ring Walls

Scale 1" = ...



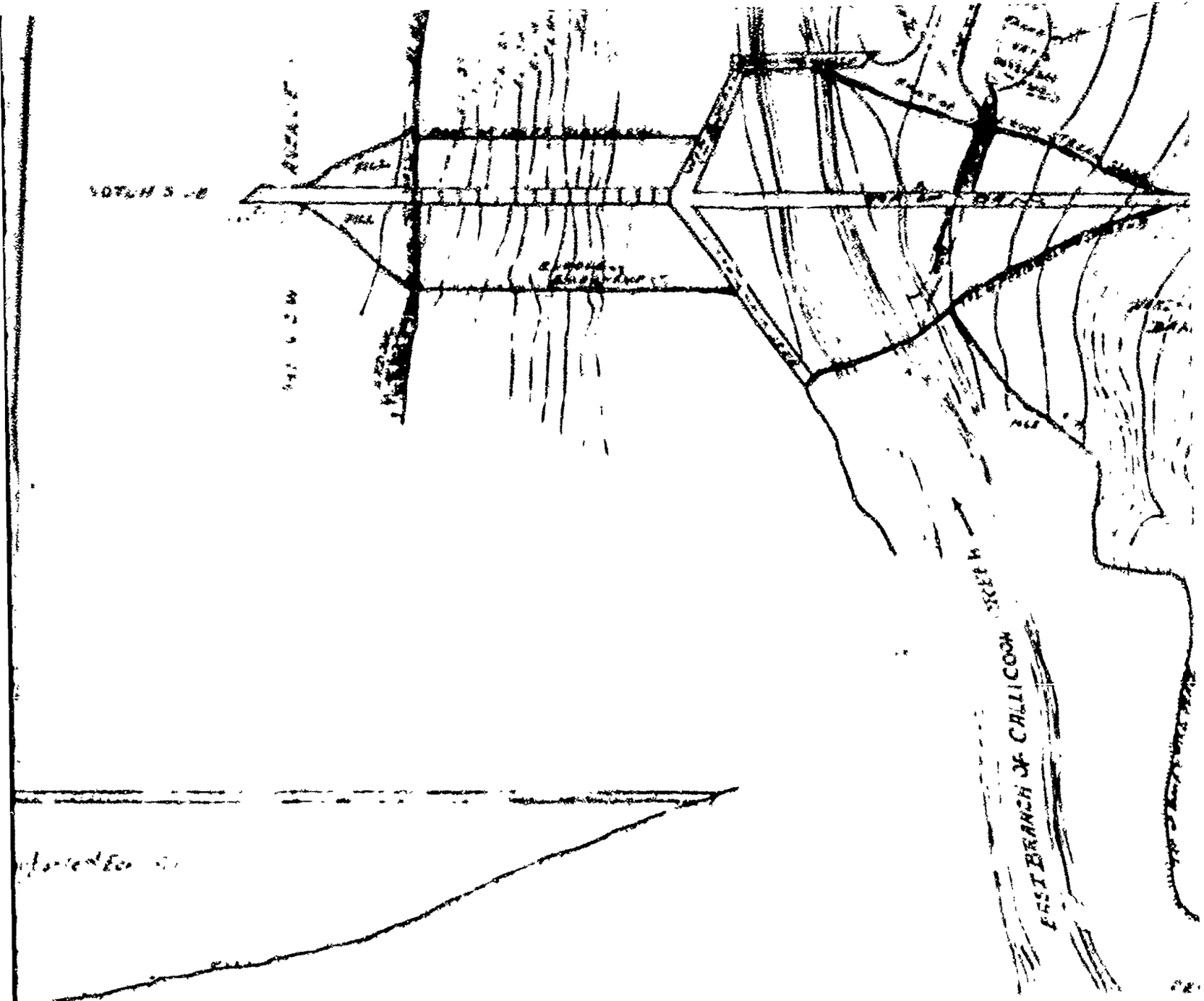
Details of Flume Inlet Trash Rack

Scale 1/2" = 1 Foot



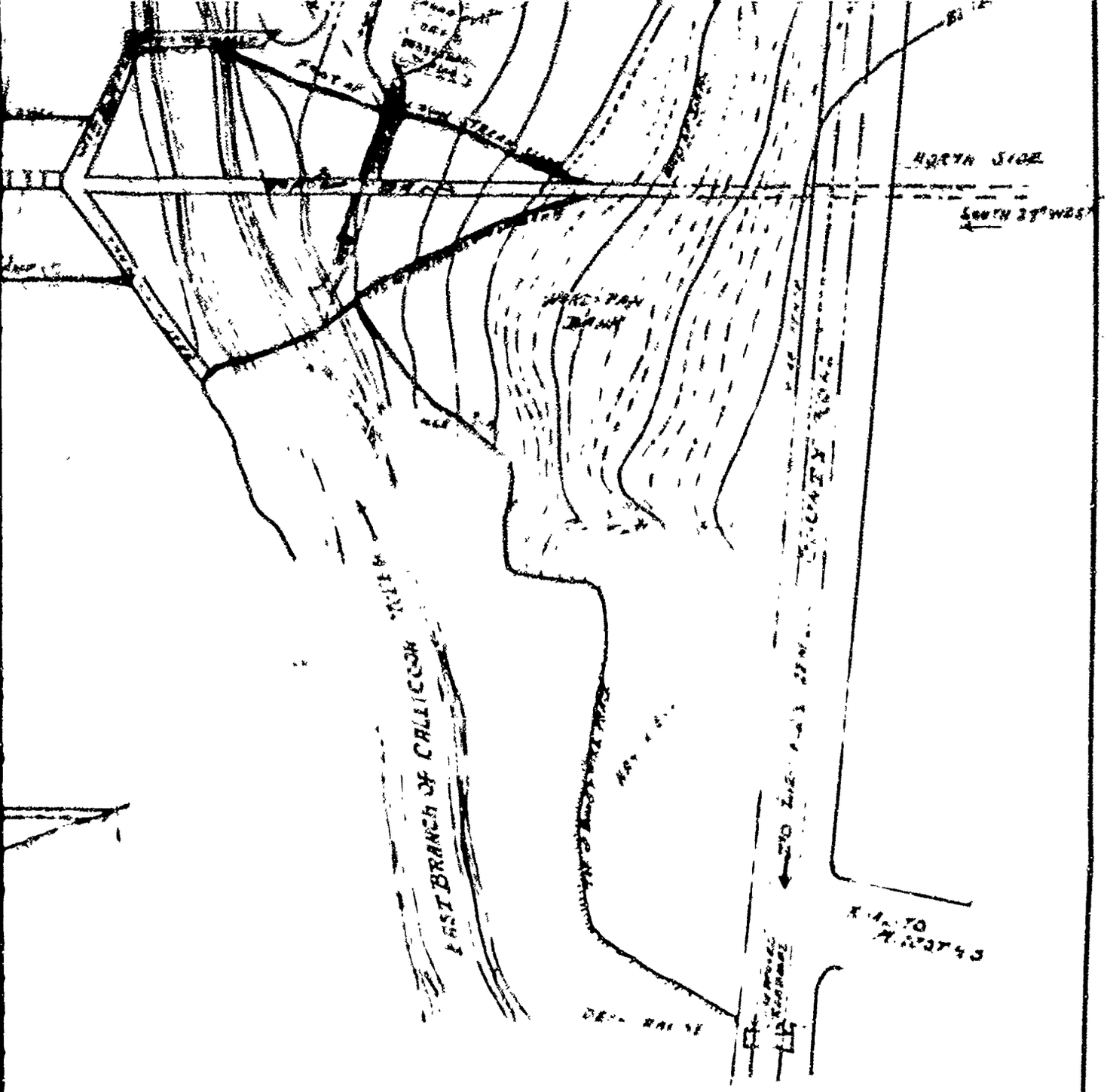
Typical Section of Wing Wall at Each End of Spillway

Scale 1" = 1'



DETAILED DR
FOR
-LAKE-JEFF

—OWNED - BY
--LAKE-JEFFER
JEFFERSONVILLE
- SCALE-AS-SHOWN-DATED:
——Nial Sherw



DETAILED DRAWINGS
FOR
-LAKE-JEFFERSON-

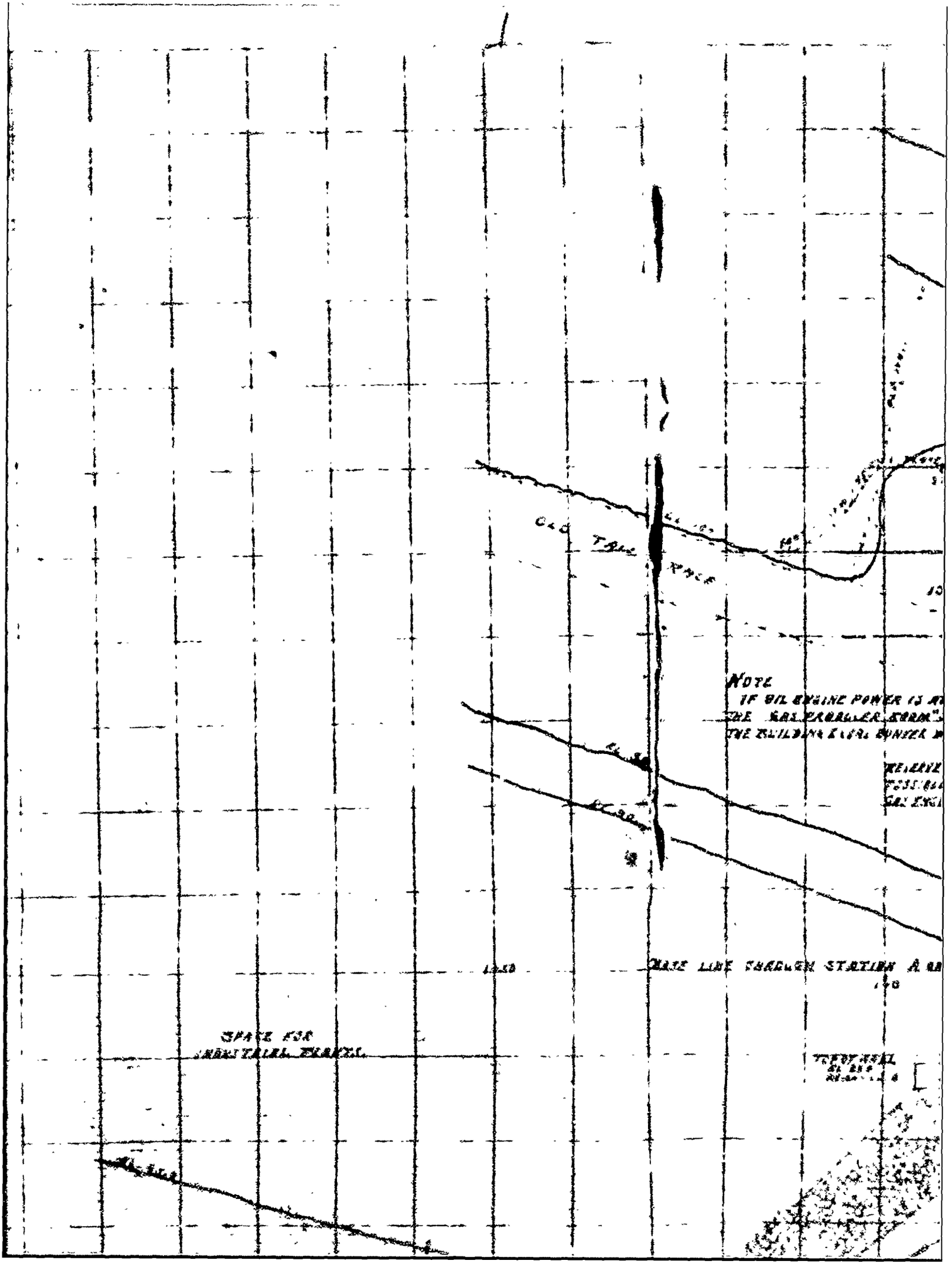
— OWNED - BY —

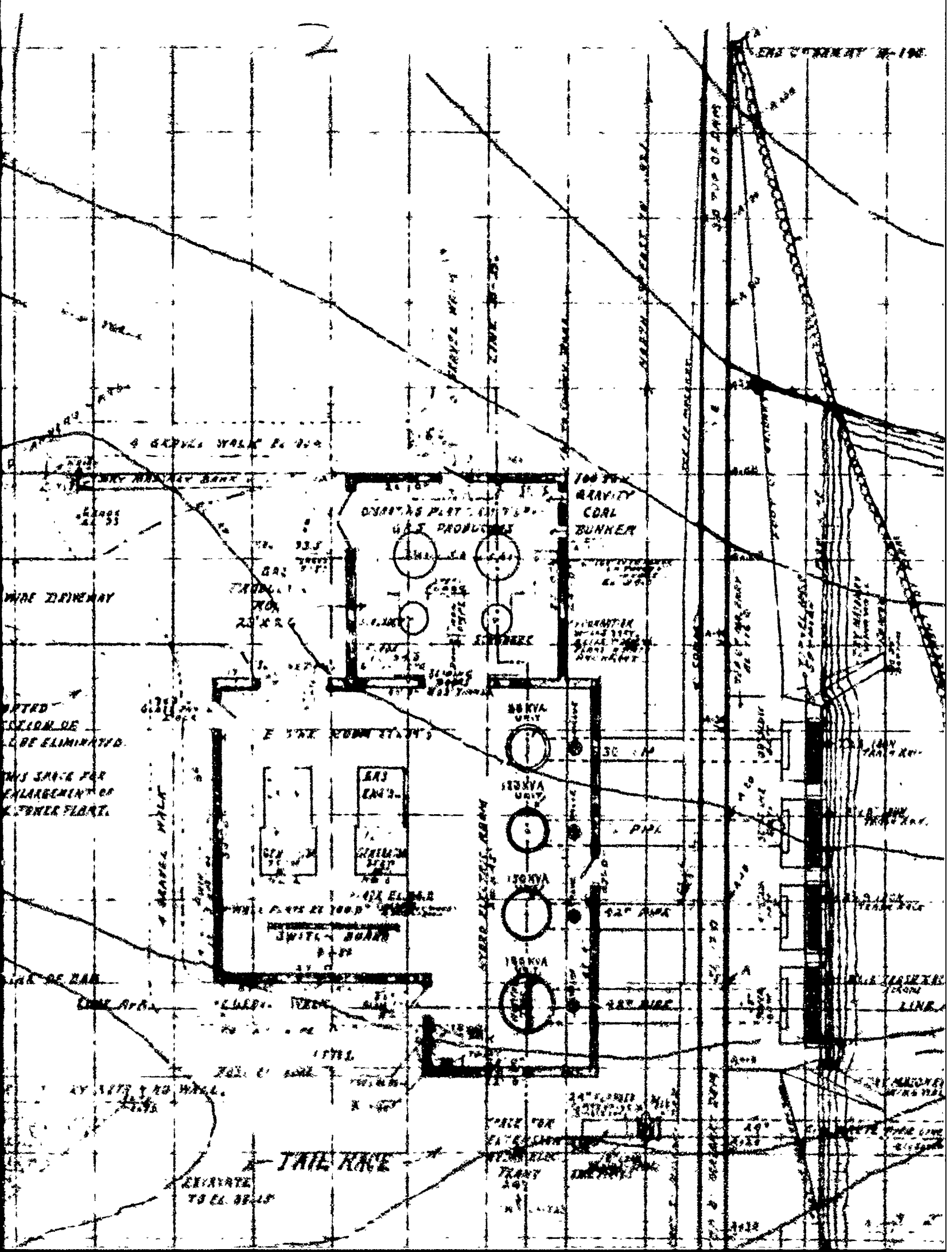
- -LAKE-JEFFERSON-INC -

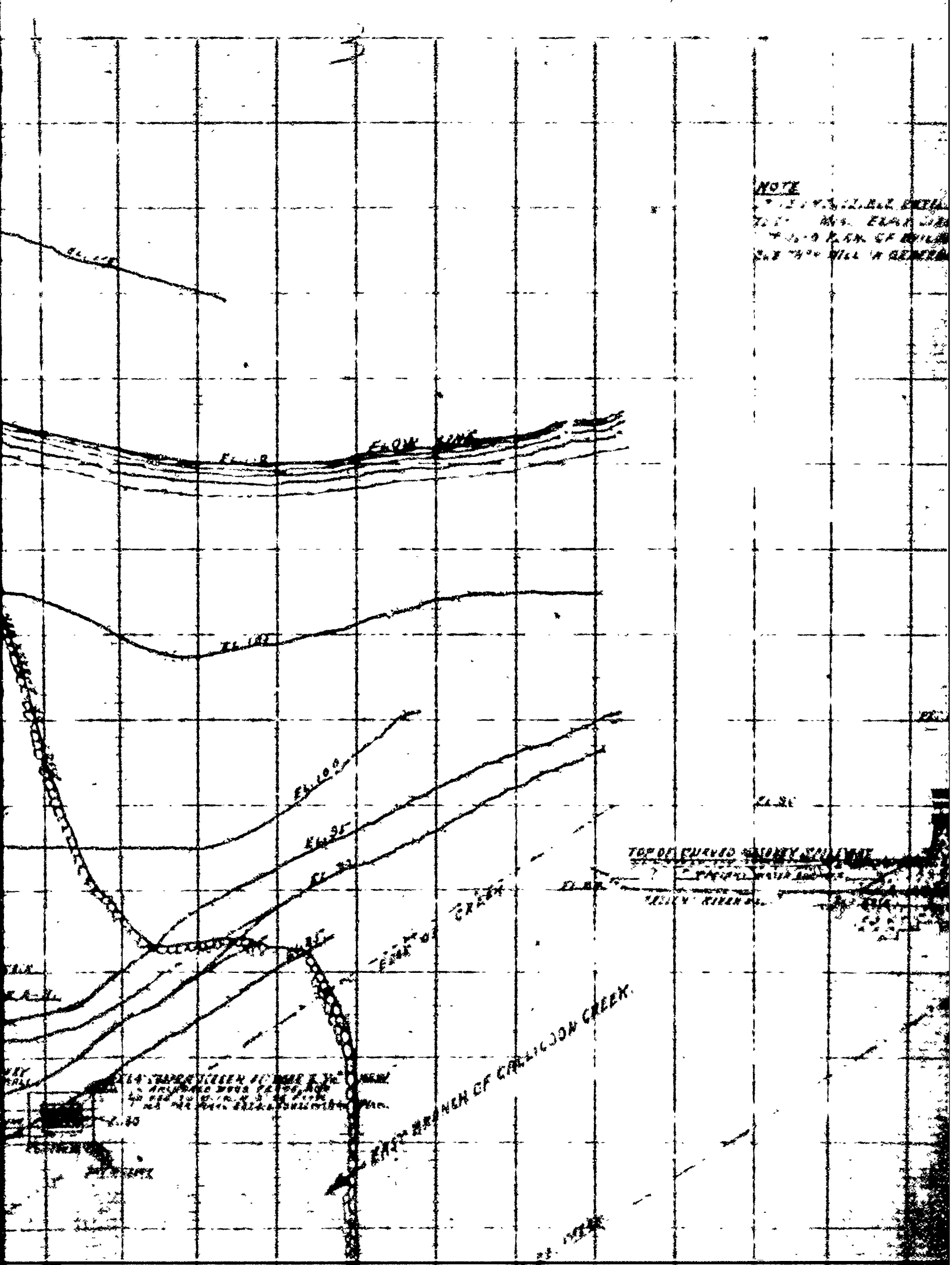
JEFFERSONVILLE - NEW-YORK

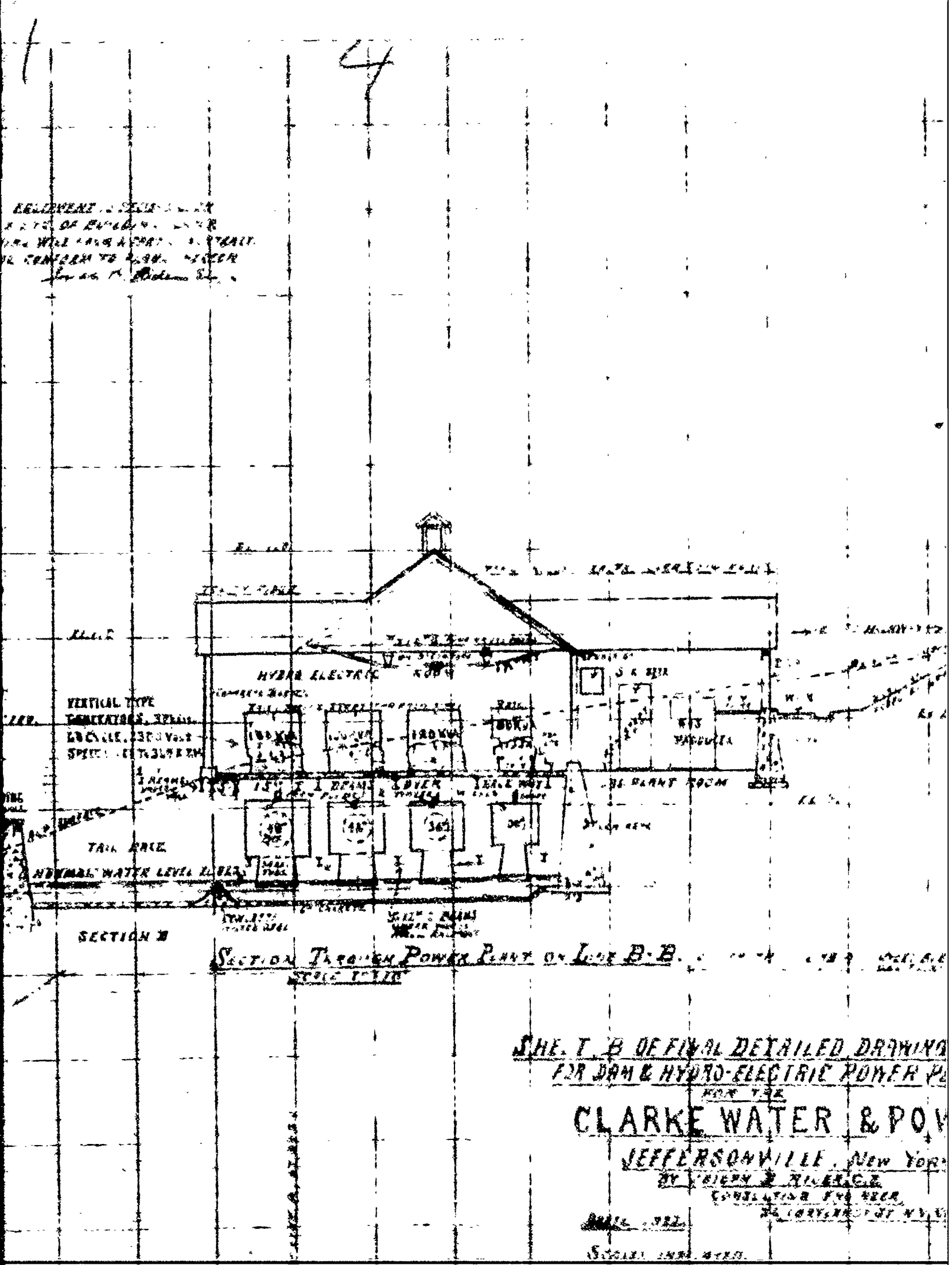
- SCALE-AS-SHOWN-DATED-JUNE-14-1927 -

—— Nial Sherwood C.E. ——


NOTE
BASE LINE
SPACE FOR


100 TON GRAVITY COAL BUNKER
WIRE RAILWAY
TAIL RACE


NOTE
EL. 100
EL. 95
EL. 90
EL. 85
EL. 80
TOP OF CURVED CONCRETE SCREEN
EAST BRANCH OF CALUMET CREEK

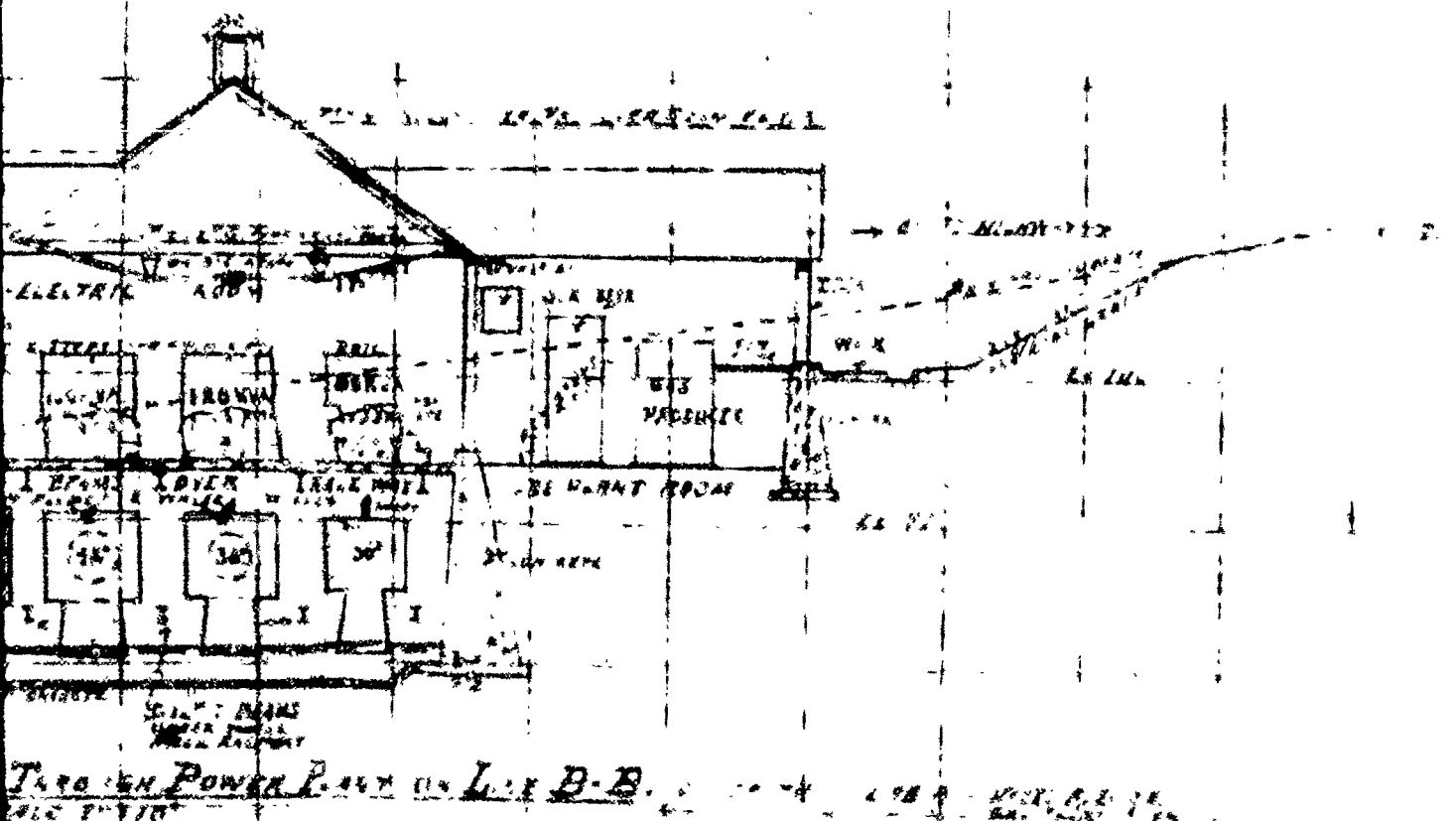


SECTION THROUGH POWER PLANT ON LINE B-B.

SHEET B OF FINAL DETAILED DRAWING
FOR DAM & HYDRO-ELECTRIC POWER PL

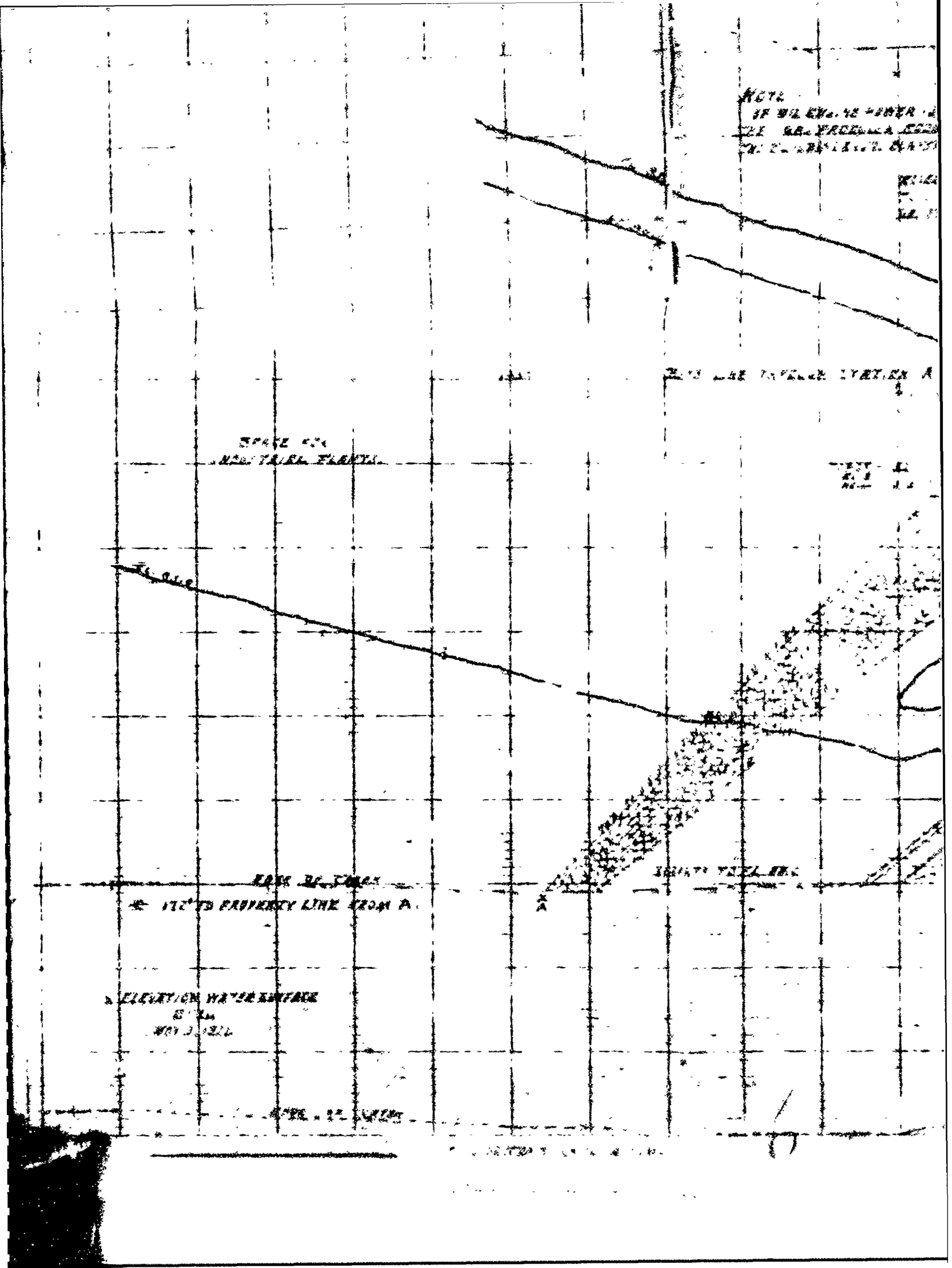
CLARKE WATER & PO

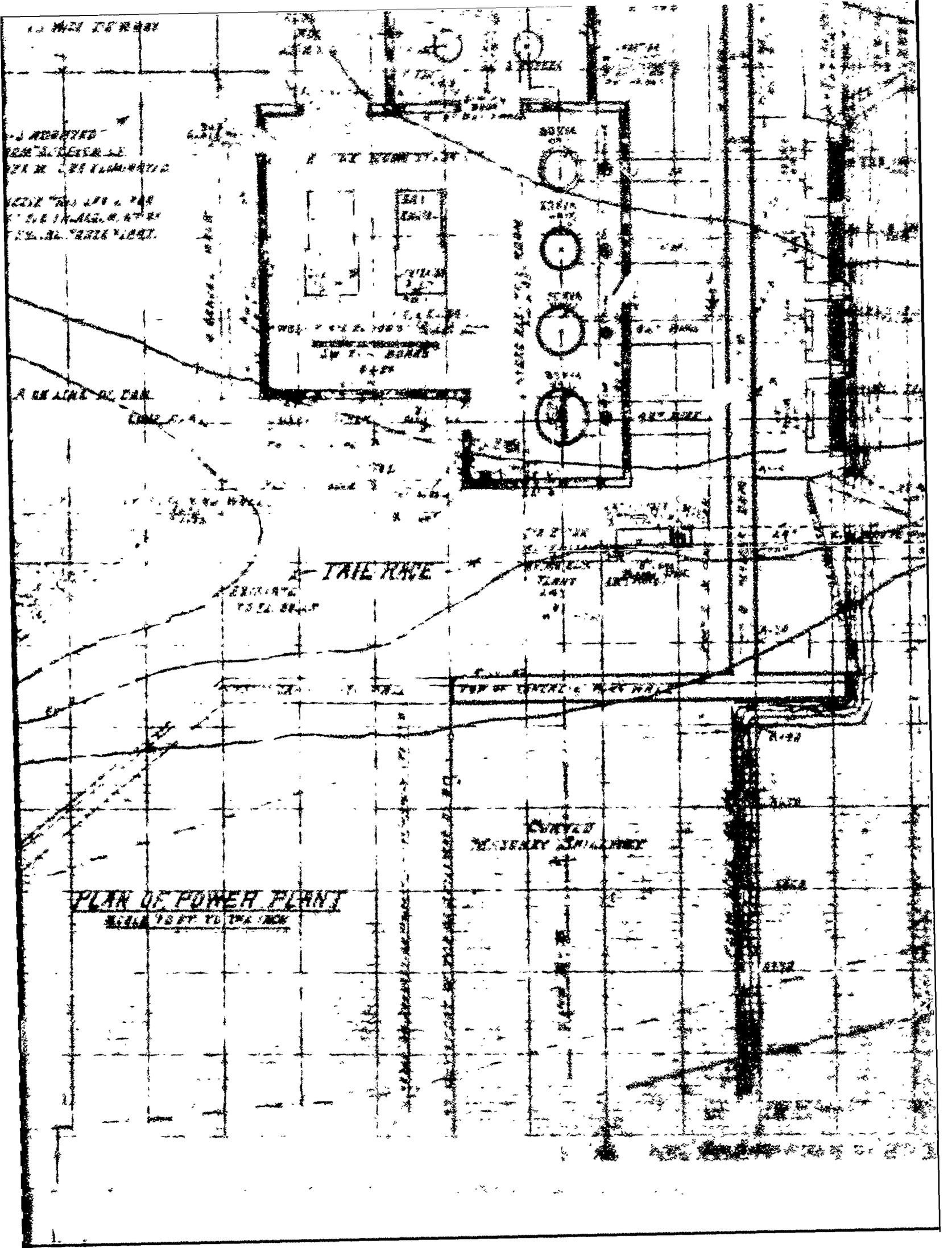
JEFFERSONVILLE, New Yor

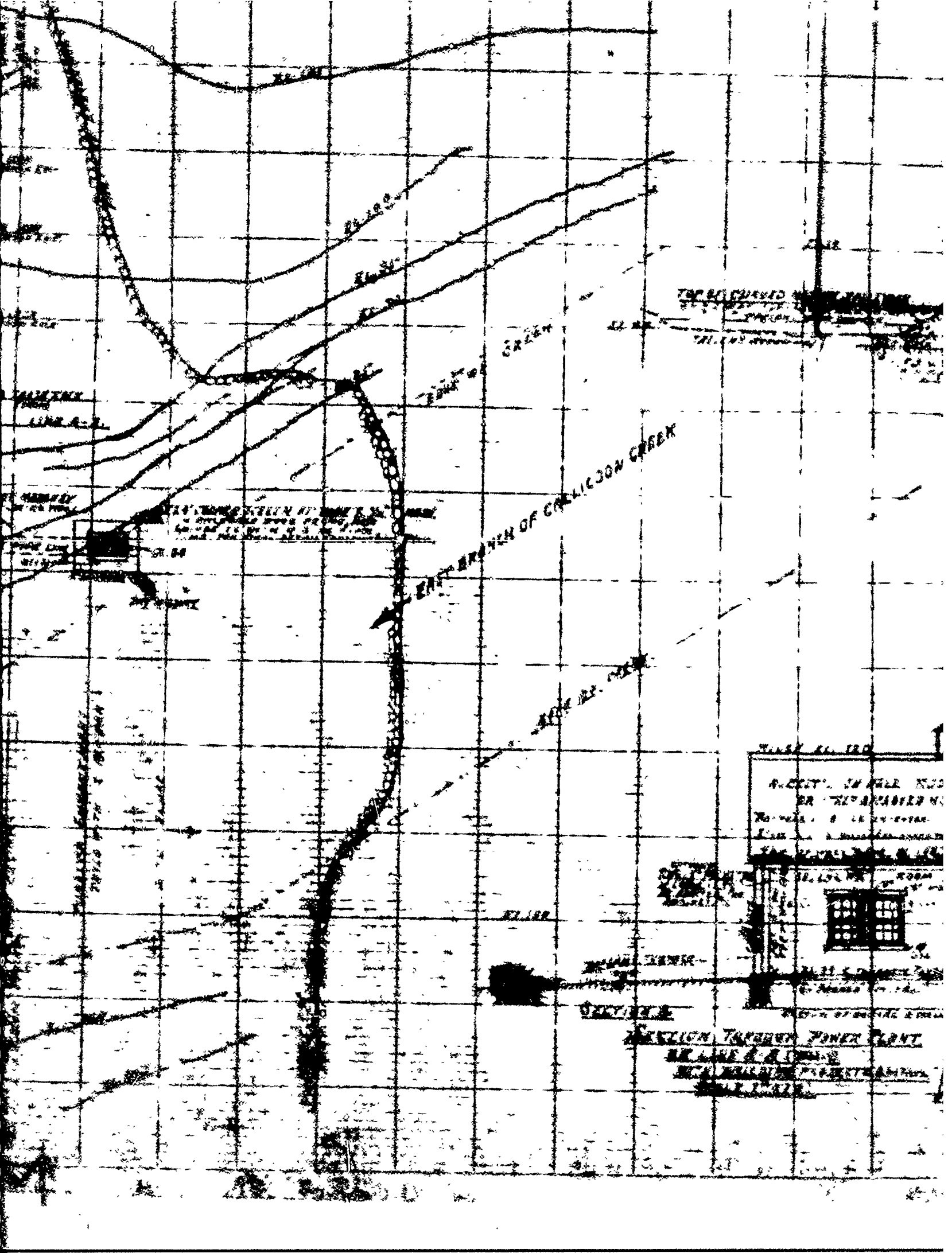


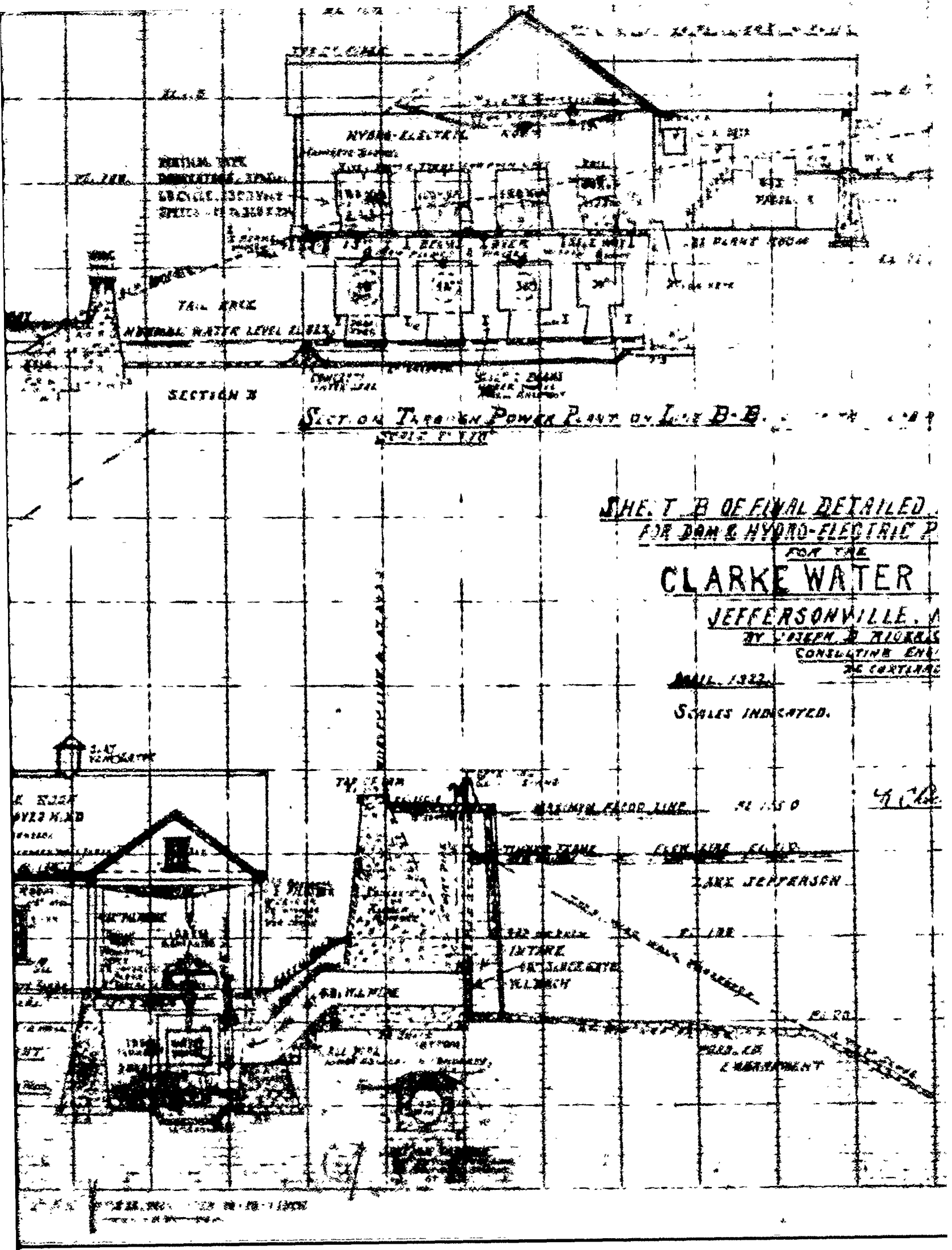
Transverse Power Plant thru Line B-B.

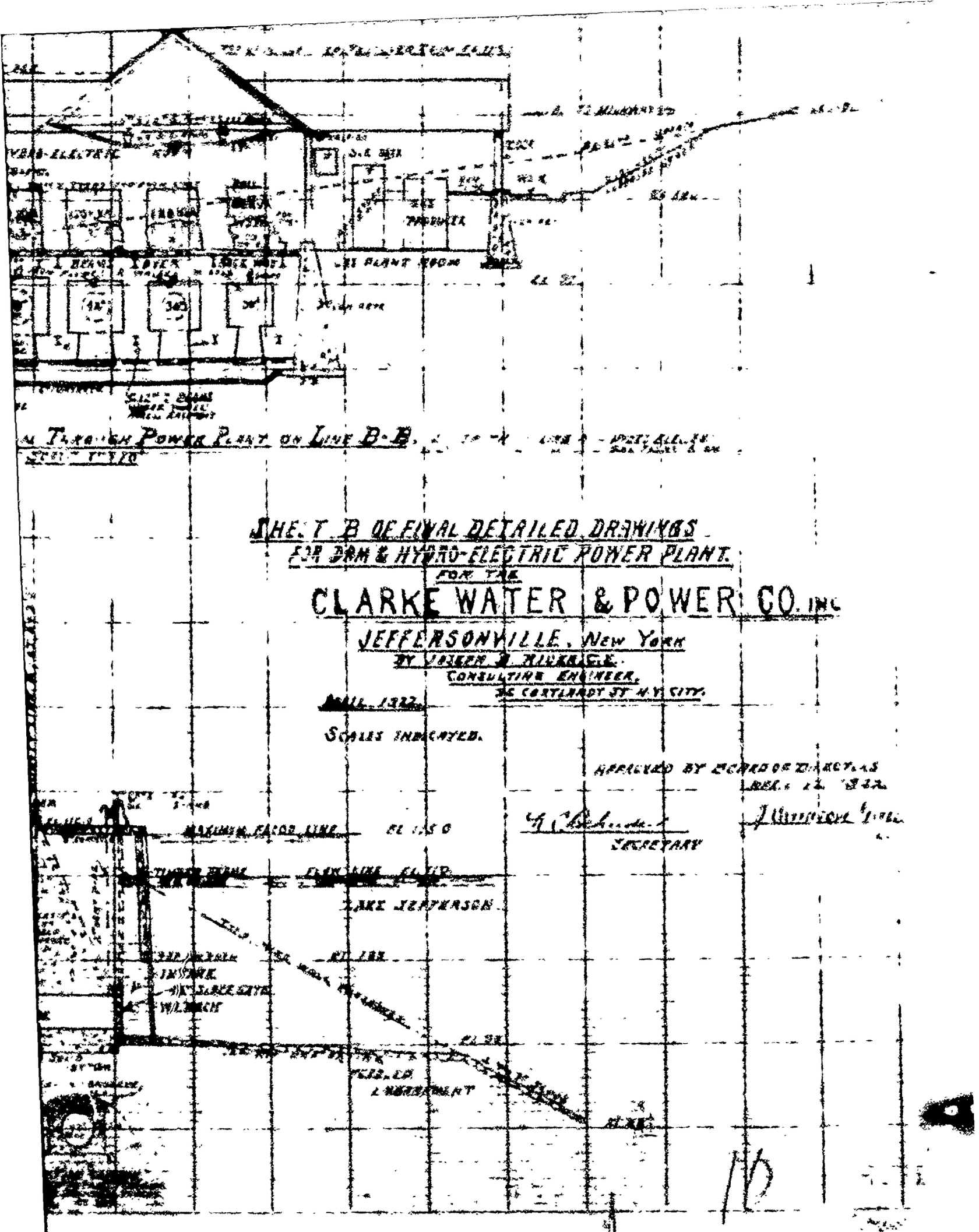
SHT. 7 OF FINAL DETAILED DRAWINGS
FOR DAM & HYDRO-ELECTRIC POWER PLANT
FOR THE
CLARKE WATER & POWER CO. INC.
JEFFERSONVILLE, NEW YORK
BY JOSEPH B. KLARICH
CONSULTING ENGINEER
26 COURTLANDT ST. N.Y.C.




TAIL RACE
PLAN OF POWER PLANT


EAST BRANCH OF CALLICOON CREEK


SECTION B
SECT. ON THROUGH POWER PLANT ON LINE B-B.
SHEET B OF FINAL DETAILED
FOR DAM & HYDRO-ELECTRIC P
FOR THE
CLARKE WATER
JEFFERSONVILLE, I
BY JOSEPH B KIRKLA
CONSULTING ENG
APRIL 1932.
SCALES INDICATED.
MAXIMUM FLOOD LINE
LAKE JEFFERSON
INTAKE



Section on Power Plant on Line B-B.

SHEET B OF FINAL DETAILED DRAWINGS
FOR DAM & HYDRO-ELECTRIC POWER PLANT.
FOR THE
CLARKE WATER & POWER CO. INC.
JEFFERSONVILLE, New York
BY JOSEPH B. KIRKALY C.E.
CONSULTING ENGINEER,
26 CORTLANDT ST. N.Y. CITY.

APRIL 1922.

SCALES INDICATED.

APPROVED BY BOARD OF DIRECTORS
DEC. 12 1922

Secretary

MAXIMUM FLOOD LINE EL 135.0

TIMBER DAM EL 130.0

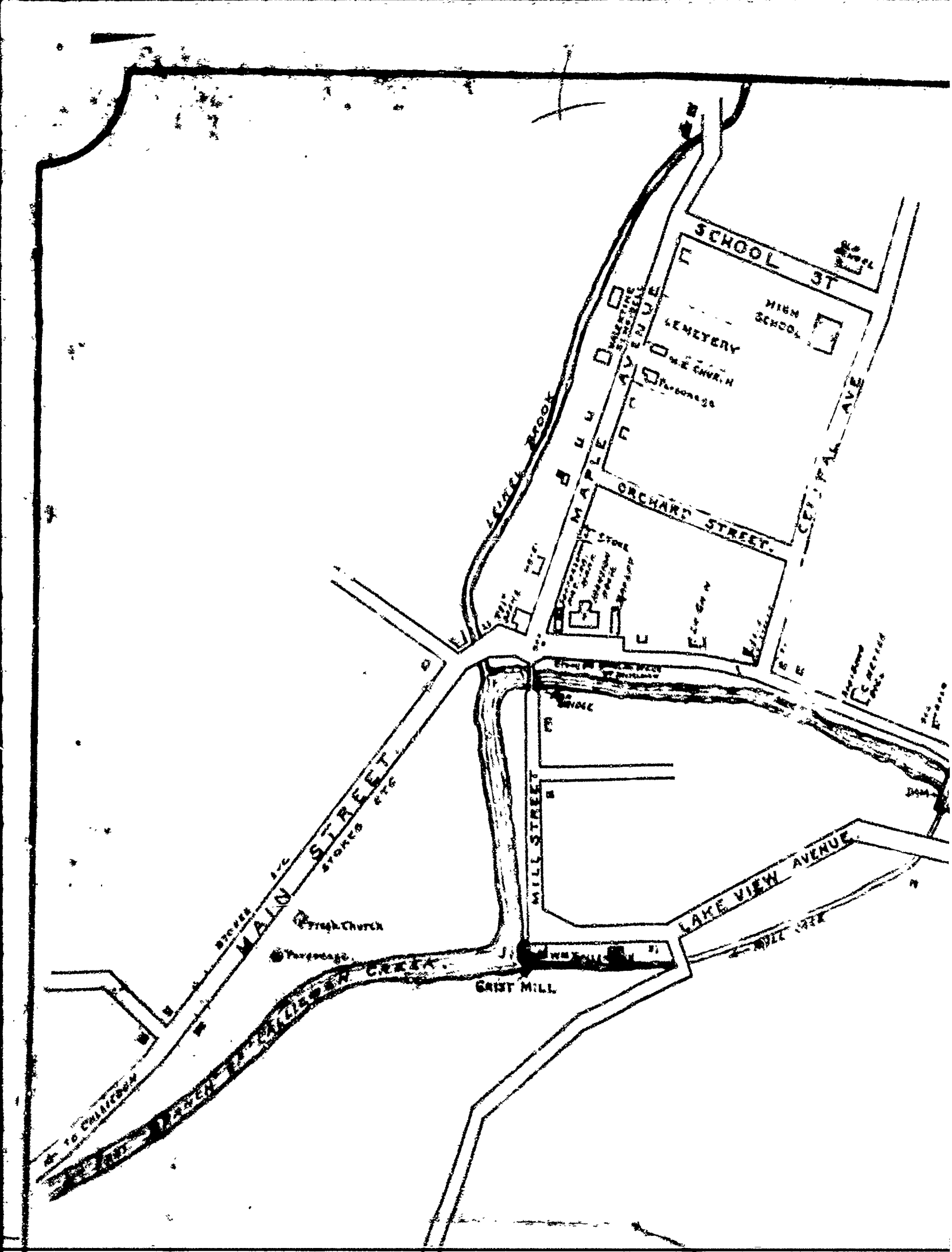
LAKE JEFFERSON

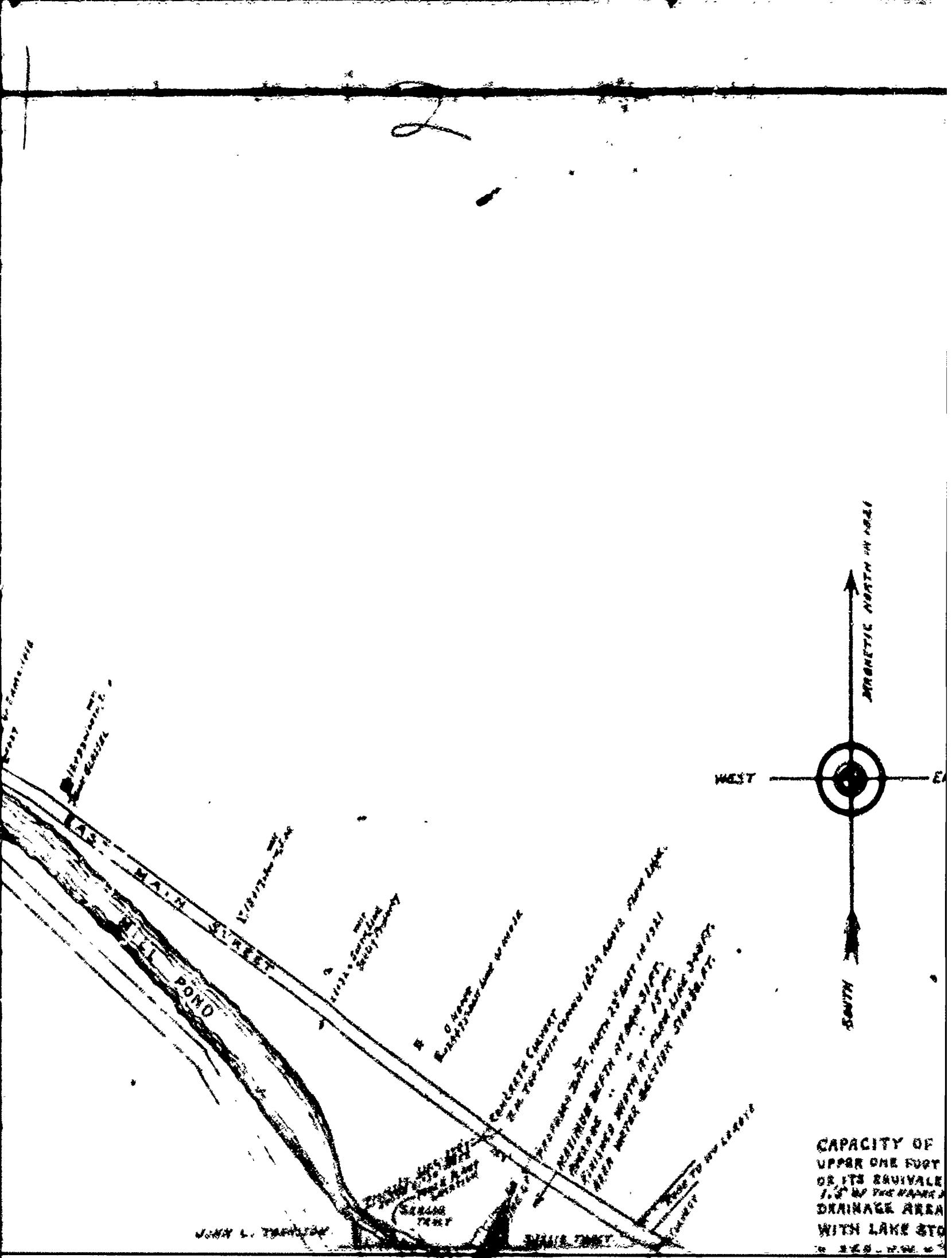
EL 128

EL 98

EL 92.0
ENLARGEMENT

12

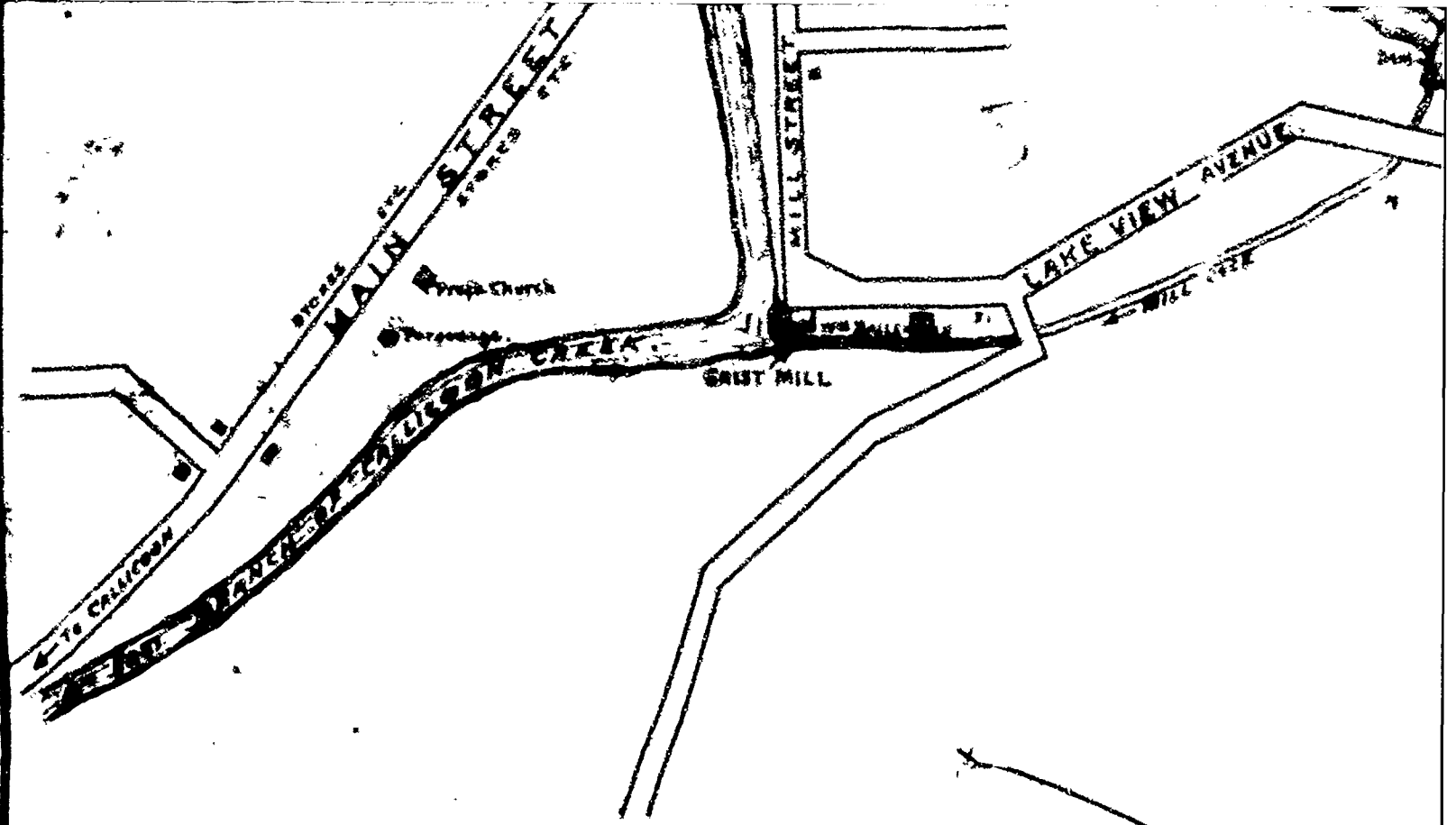

SCHOOL ST
HIGH SCHOOL
CEMETERY
M.E. CHURCH
Parsonage
MAPLE AVENUE
LITTLE BROOK
ORCHARD STREET
CENTRAL AVE
MILL STREET
MAIN STREET
LAKE VIEW AVENUE
Bridge
Stores etc
Baptist Church
Parsonage
GRIST MILL
KILLINGLY CREEK
Rt. 12 CHAPLEAU

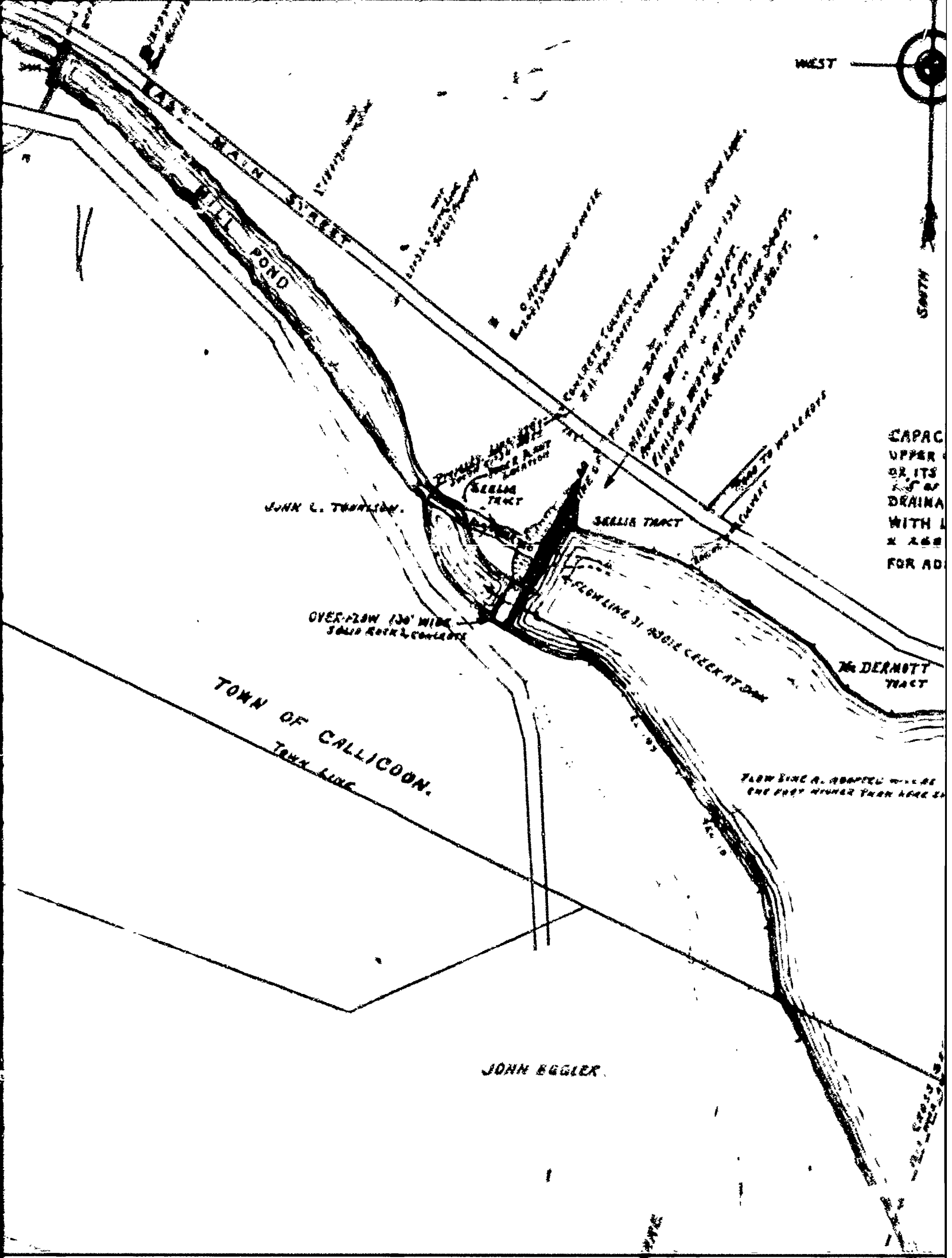

MAGNETIC NORTH IN 1931
WEST
MAIN
STREET
POND
JOHN L. TRAFTON
SERAGE TRACT
CAPACITY OF
UPPER ONE FOOT
OR ITS EQUIVALE
DRAINAGE AREA
WITH LAKE STO

1 3

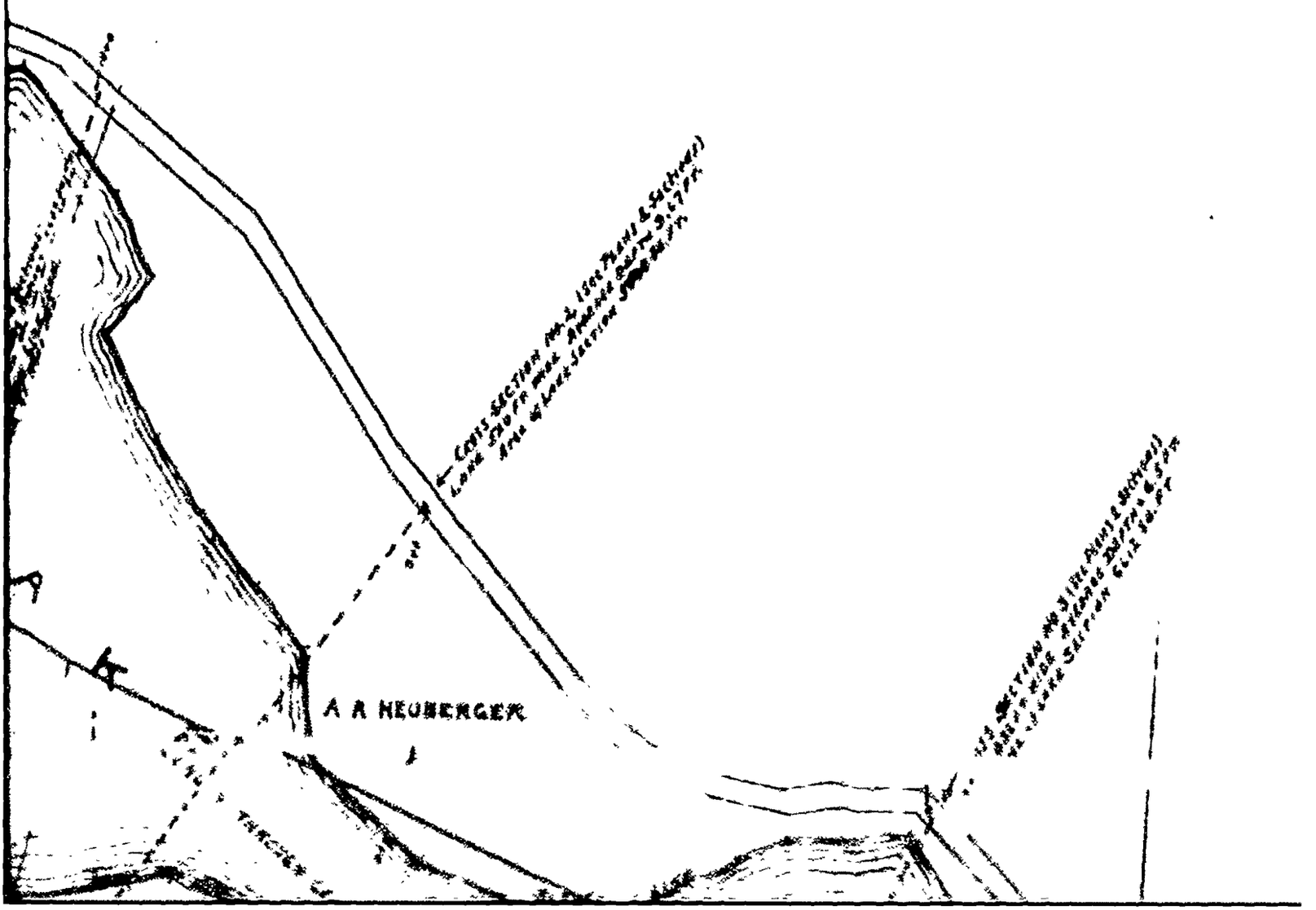
EAST

OF LAKE 30 MILLION CU.FT. = 225 MILLION GALLONS.
UST OF WATER WILL GIVE 231 HORSE POWER FOR 10 HOURS ;
VALENT UNDER THE 30 FT. AVAILABLE HEAD & 80% WHEEL EFFICIENCY.
AREA = 22400 SQ. MILES, MAIN STREAM = 124 SQ. MILES, BRISCOE STREAM = TOTAL OF 148 SQ. MILES


MAIN STREET
MILL STREET
LAKE VIEW AVENUE
Presb. Church
Parsonage
GRIST MILL
MILL RACE
CALLICOON CREEK
TO CALLICOON


WEST
SOUTH
U.S. MAIN STREET
MILL POND
CONCRETE CULVERT
SKELLIE TRACT
JUNK L. TRUNDLEY.
SKELLIE TRACT
OVER-FLOW 130' WIDE
FLOWLINE OF HOGIE CREEK AT
Mr. DERMOTT TRACT
TOWN OF CALLICOON.
TOWN LINE
JOHN EGGLER.

F LAKE 30 MILLION CU.FT. = 225 MILLION GALLONS
T OF WATER WILL GIVE 231 HORSE POWER FOR 10 HOURS
LENT UNDER THE 30 FT. AVAILABLE HEAD & 80% WHEEL EFFICIENCY.
K AMT OF WATER & POWER IS AN INCREASE OVER THE AVERAGE) MEN 24 HOURS BY THE FLOW OF THE CREEK.
EA = 22.1 SQ. MILES, MAIN STREAM + 12+ SQ. MILES, BRISCOE STREAM = TOTAL OF 34 SQ. MILES.
TORAGE FOR REGULATION, POWER AVAILABLE WITH 80% EFFICIENCY
= 30 H.P. HORSE POWER, AVERAGE 10 HOURS PER DAY, EVERY DAY, ASSUMING CONTROL OF AVERAGE RUN-OFF OF 1.6 SEC-FT SQ. M.
AL DATA SEE MEMORANDA & REPORT ESTIMATES, ETC.



MAP

-OF-

LAKE JEFFERSON

AS PROPOSED

-BY THE-

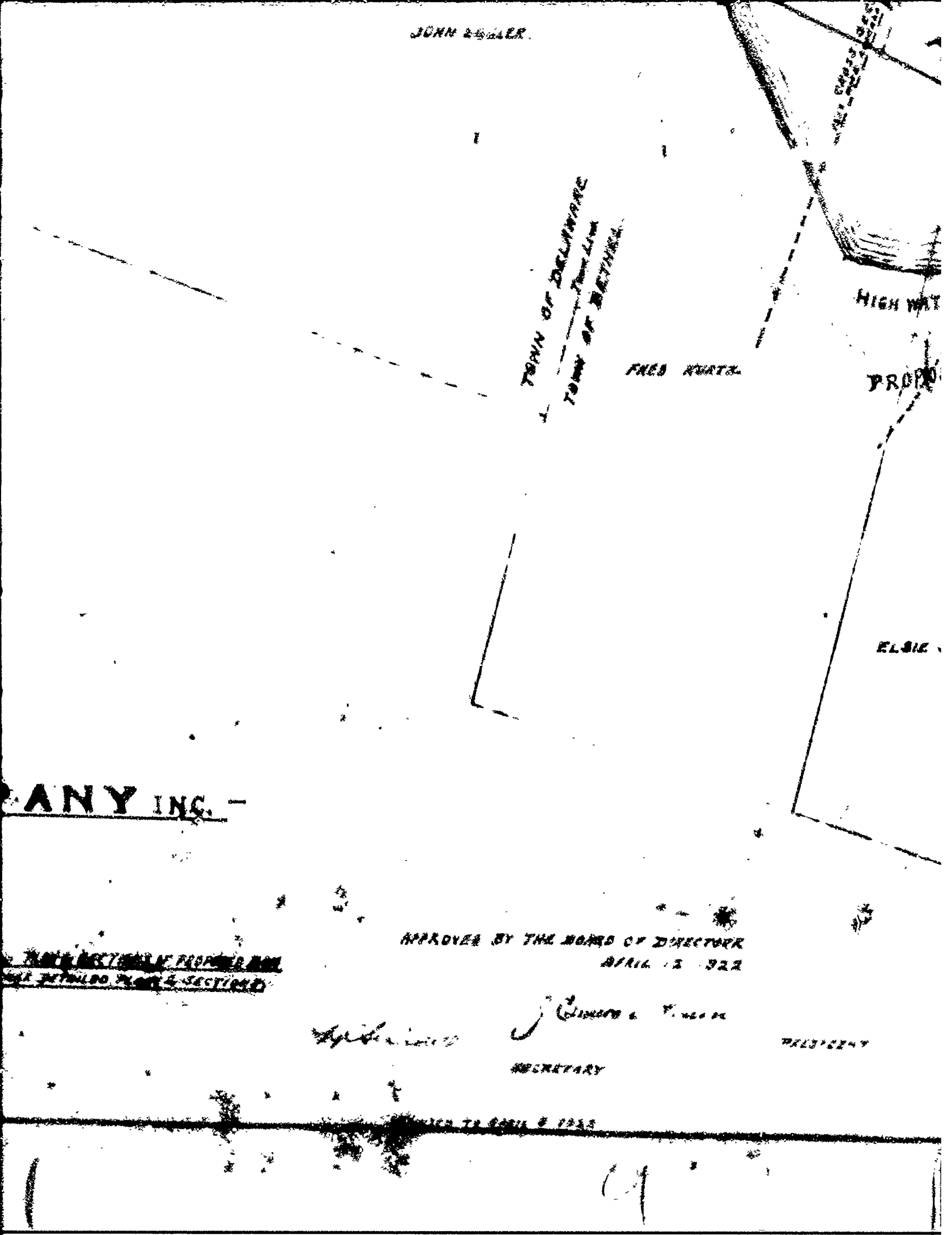
CLARK WATER & POWER COMP.

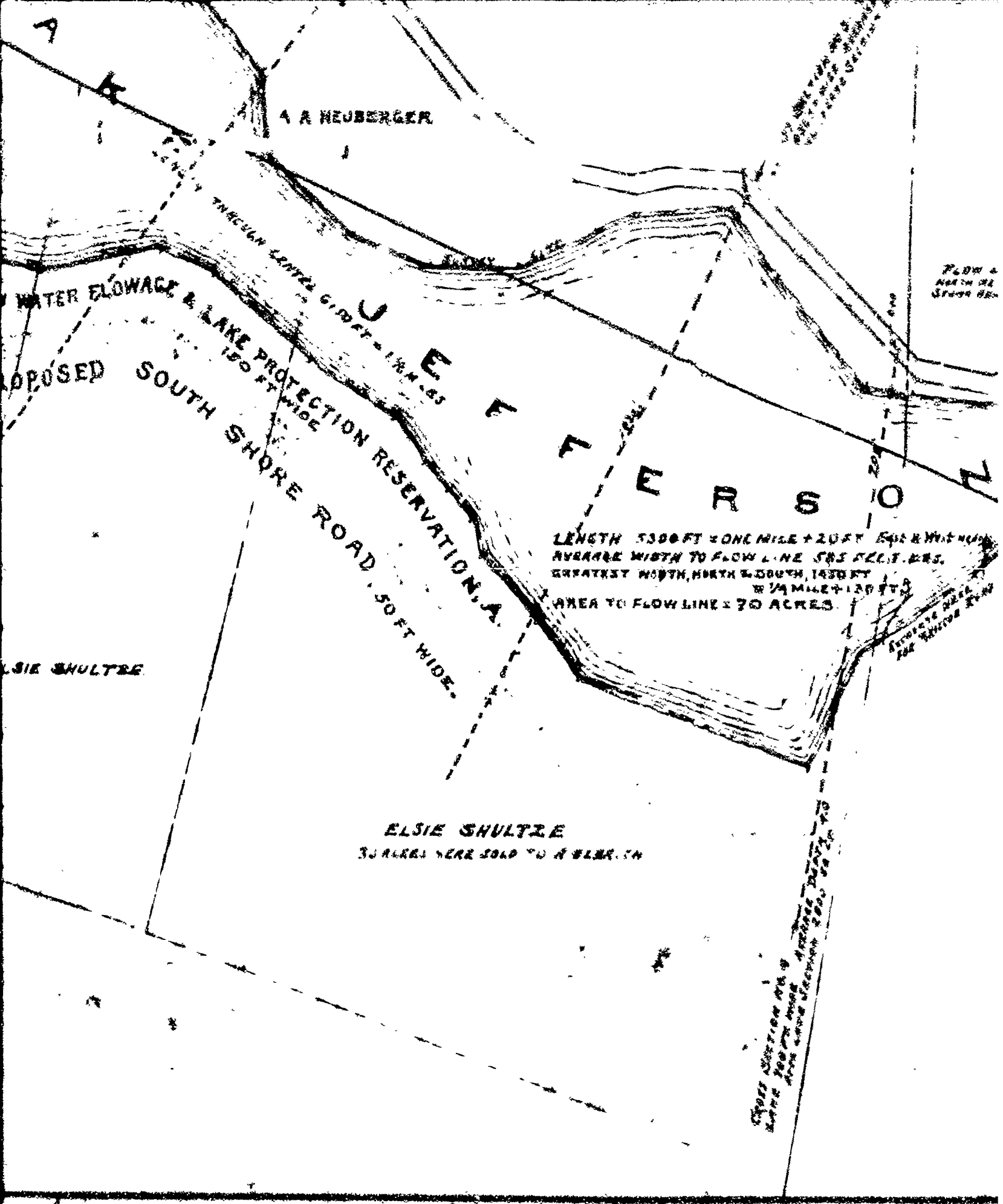
-LIMITED-

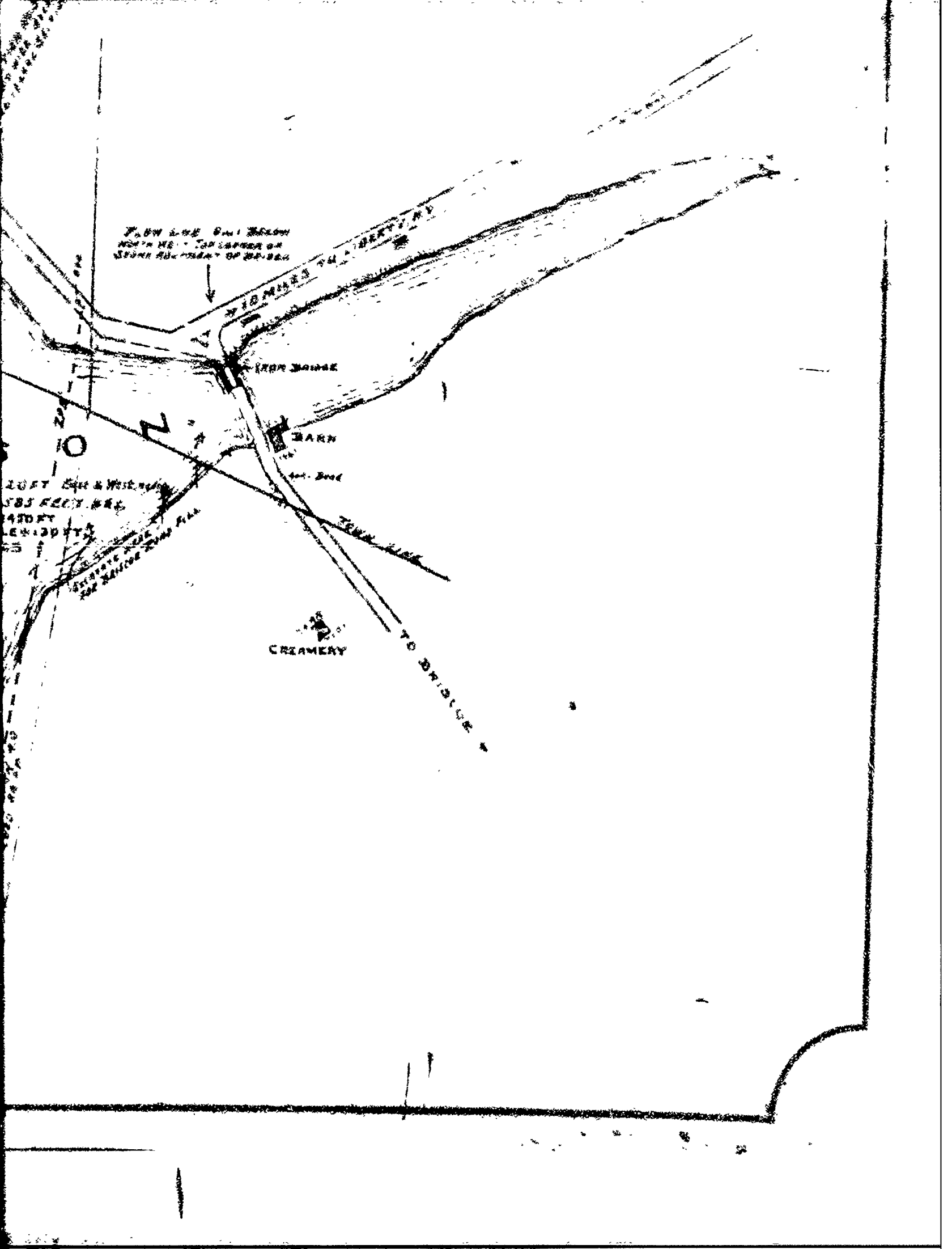
-JEFFERSONVILLE, N.Y.-

(SULLIVAN COUNTY)

SCALE 1" = 200 FT.


JOHN
TOWN OF DELAWARE
TOWN OF BETHEL
FREE
HIGH
PROP
ELSIE
ANY INC.
APPROVED BY THE BOARD OF DIRECTORS
APRIL 2 922
PRESIDENT
SECRETARY


A. A. HEIDBERGER
WATER ELOWAGE & LAKE PROTECTION RESERVATION, A.
150 FT WIDE
PROPOSED SOUTH SHORE ROAD, 50 FT WIDE.
ELSIE SHULTZE
ELSIE SHULTZE
LENGTH 5300 FT = ONE MILE + 20 FT
AVERAGE WIDTH TO FLOW LINE 583 FEET.
GREATEST WIDTH, NORTH & SOUTH, 1430 FT
= 1/4 MILE + 130 FT
AREA TO FLOW LINE = 70 ACRES


BARN
CREAMERY
TO BRIDGE